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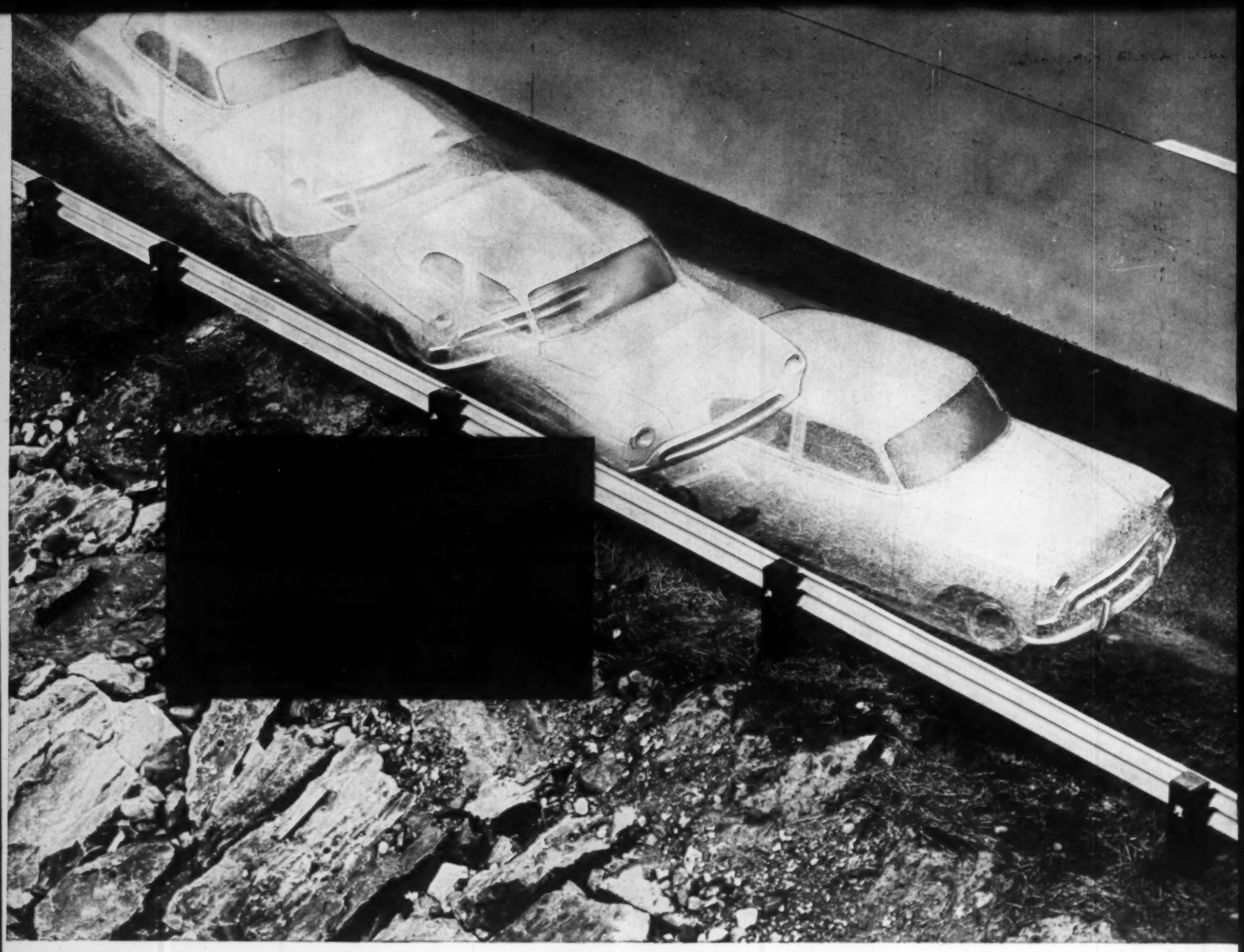

They Put a Cushion in Steel Guardrail

Early guardrails were often too flimsy or too solid. Some lacked the strength to contain cars when they were hit and served mainly as a warning device. Others presented a solid, inflexible barrier that frequently caused excessive damage to the colliding vehicle.

Then Armco FLEX-BEAM Guardrail brought new standards to highway safety. FLEX-BEAM has just the right combination of *beam strength* to withstand impact and keep cars within the roadway, plus *flexibility* to cushion the shock. The corrugated face of FLEX-BEAM has high visibility, day or night, to warn motorists of possible danger. About the only maintenance needed is an occasional painting. There are no springs or tension devices to install, adjust and maintain.

FLEX-BEAM is just one of many Armco Products especially designed to meet specific construction and drainage needs. Armco Corrugated Metal Pipe-Arch for example, was developed for drainage under limited headroom. To combat erosive drainage flow there is Armco PAVED-INVERT. And to fight severe corrosion, Armco ASBESTOS-BONDED. The list of other Armco-developed products includes steel buildings, bin-type retaining walls, steel pipe piling, re-usable steel sheeting and corrugated metal bridge plank.

Today you can bring your drainage and construction problems to Armco with full assurance that you will receive all the benefits of long experience, continuing research and a real interest in helping you solve them. If your problem is difficult or unusual, why not talk it over with us.

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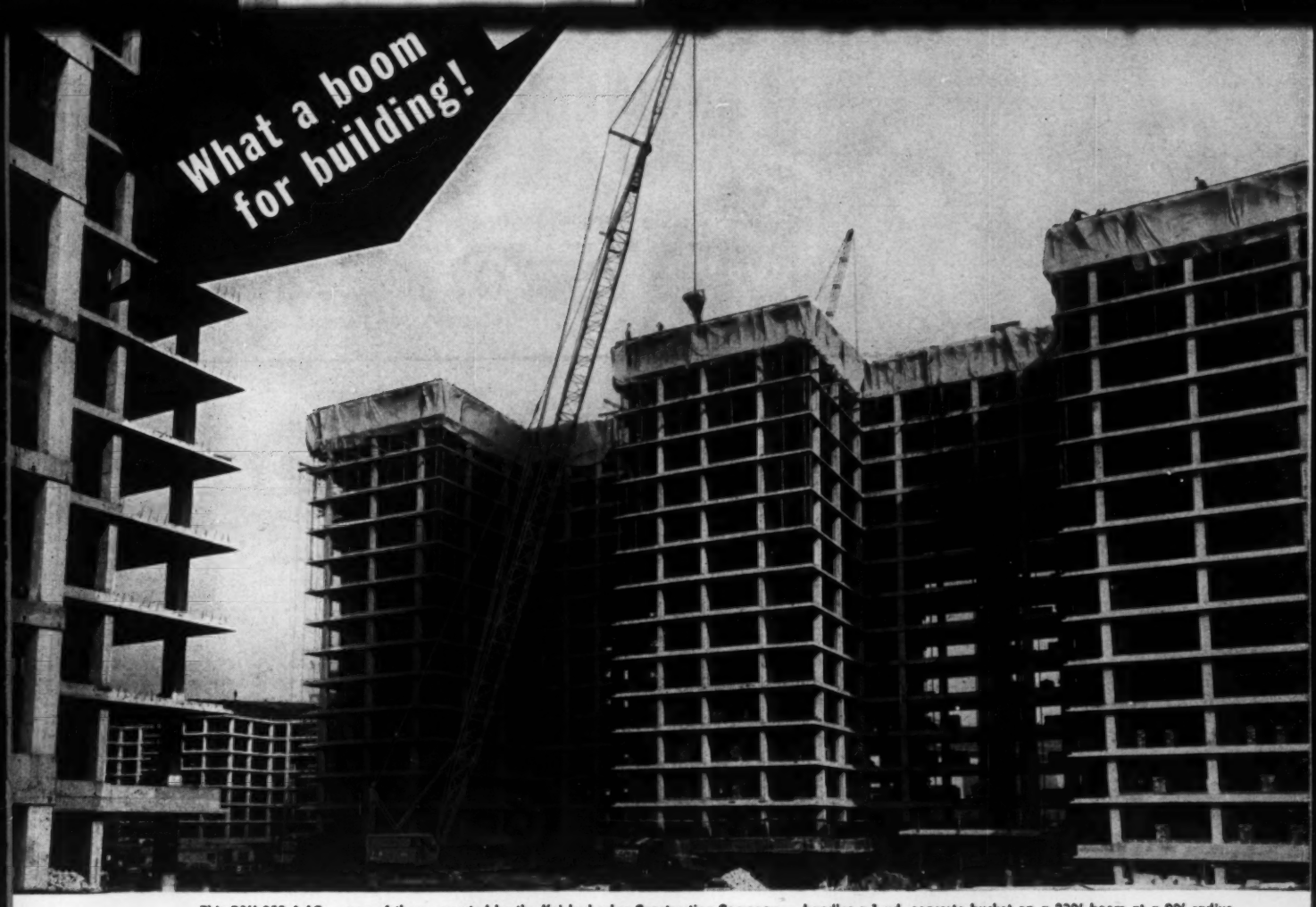

This P&H 955-A LC — one of three operated by the Knickerbocker Construction Company — handles a 1-yd. concrete bucket on a 230′ boom at a 90′ radius.

It's the world's longest boom

...on a P&H 955-A LC

And there you are . . . 230 feet of boom! It's an all-time high for crawler cranes . . . 190′ of main boom with a 40′ jib. This machine is at work on a new apartment building in New York. It will pour concrete all the way to the top — 22 floors up. At the 15th floor level the crane is still able to reach the center section of floor, pouring direct without need for hoppers and concrete buggies. Think of the saving!

Here's why P&H was picked for this job. P&H all-welded construction provides the extra strength of rolled alloy steels, throughout. Lower center of gravity gives it extra stability for extra-long booms . . . lets you put more on the hook with less danger of tipping. And friction-free Magnetorque* assures super-smooth swings which protect the long boom against shock loading or snapping.

It will pay you to get facts about P&H advantages. See your P&H dealer. P&H Power Crane and Shovel Division, HARNISCHFEGER Corporation, Milwaukee 46, Wis.

*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

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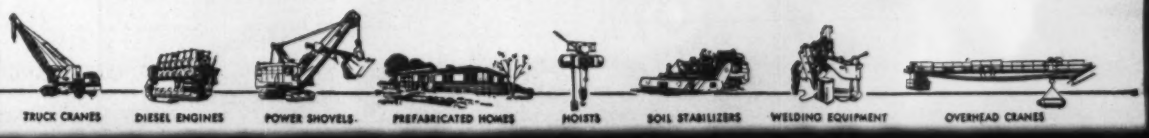

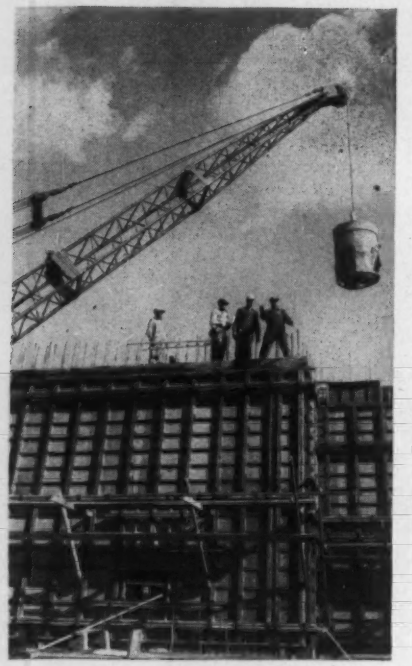

Only 3 Walers Used with Symons Forms On 16′ High Wall

Henry Carlson Construction Company, Sioux Falls, South Dakota, used only 3 walers with Symons Forms on 16′ high 12″ thick wall for City Water Treatment Plant, Sioux Falls. 10,000 square feet of Symons Panels were reused 12 times on the job, resulting in considerable saving of labor, material and a fast forming schedule.

To make it easier to pour these high walls certain of the upper panels were, at regular intervals, raised 1 foot to permit pouring through side openings for the first 8 feet of concrete. This avoided dropping concrete from the top.

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Publisher

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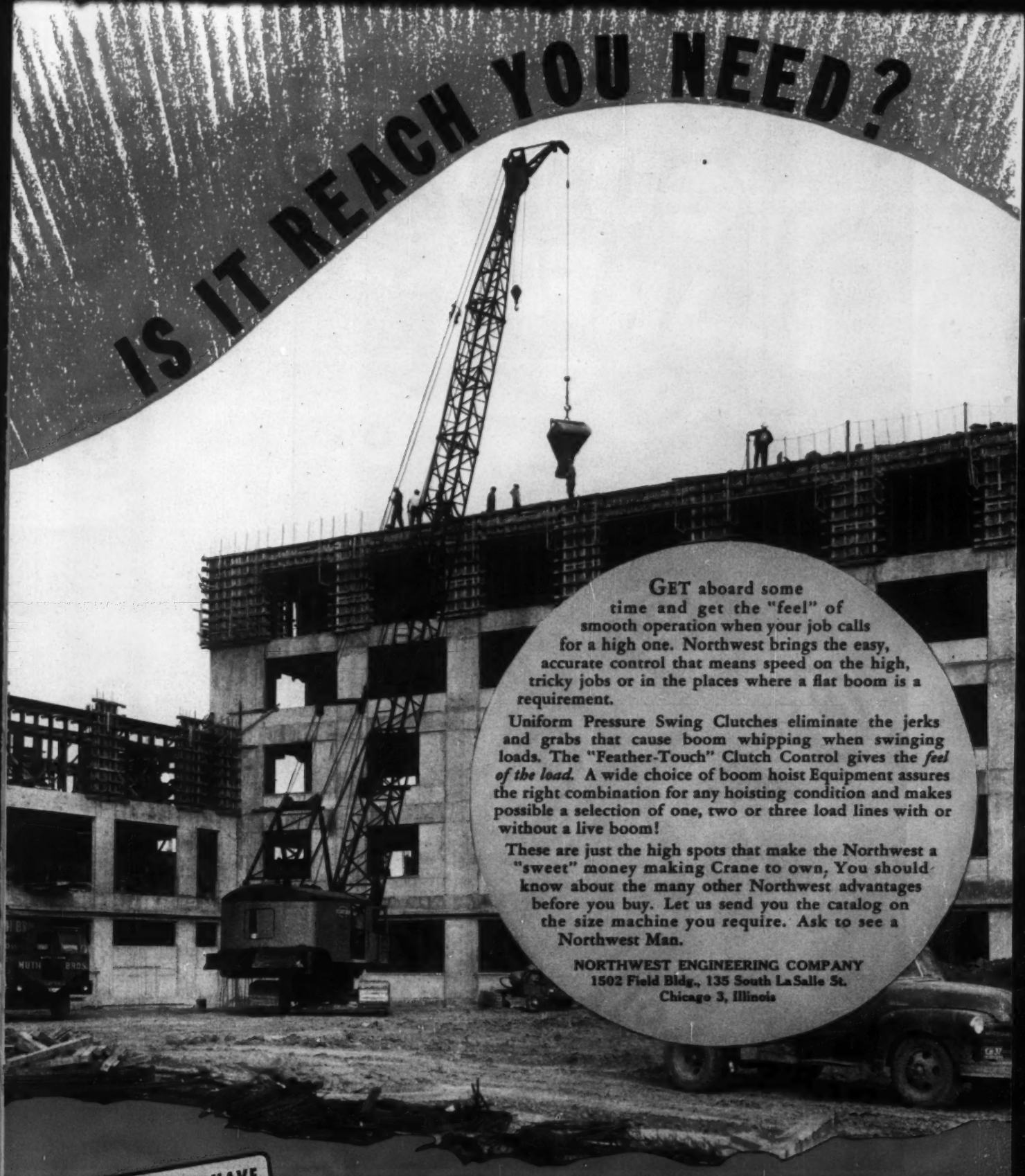
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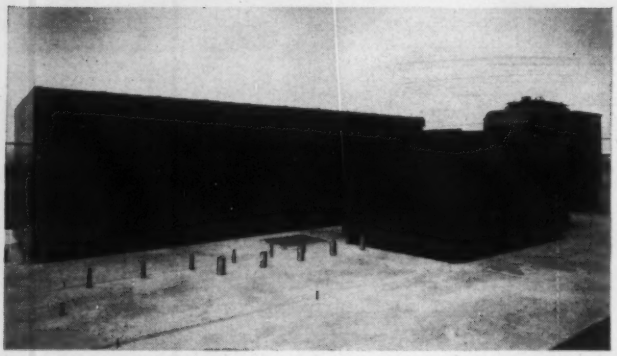
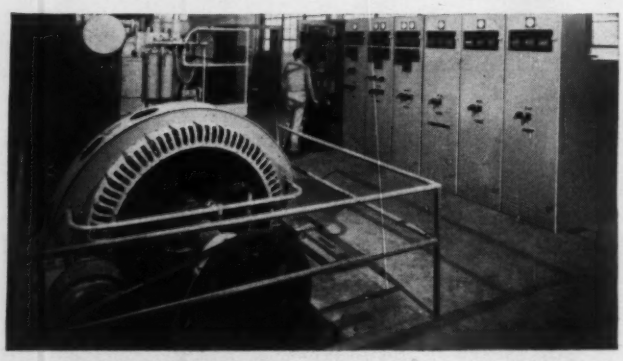
G-E power system permits easy future

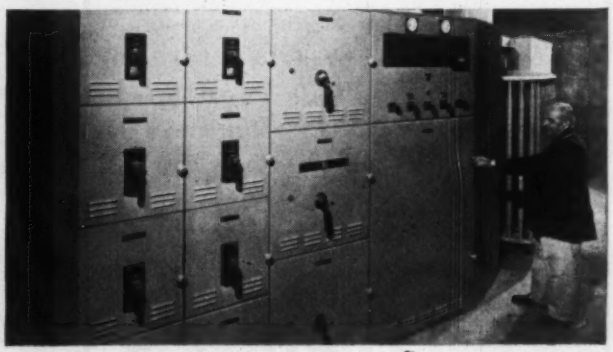


EASILY ACCESSIBLE, yet fully sheltered, this outdoor installation of the main 12-kv switchgear and one master unit substation is readily expandable. Note conduit placed for future units.

MORE EFFICIENT higher-voltage distribution of power is provided close to load by G-E indoor master unit substation (left) and integral distribution center substations (right).



EXTRA POWER RELIABILITY for airport is provided by standby, diesel-driven, G-E generator. Metal-clad switchgear, right, dependably protects vital radar, runway and approach lights.



GREATEST FLEXIBILITY of distribution and convenience of operation is achieved with G-E load center unit substations. Above is one of two substations furnishing power for terminal.

EASY EXPANSION FEATURES were planned to anticipate 5000-kva load by 1960.

expansion at new San Francisco airport

"Building-block" flexibility provides for adding capacity as needed, keeps present system costs low

San Francisco's great new International Airport handles more than two and a half million passengers each year, could handle twice that number now with no strain—and can expand at minimum cost to ten million capacity whenever necessary. A major factor in the airport's ability to expand is the highly flexible, efficient electrical system serving it.

Electrically, the airport is a model of modern system design and farsighted planning. General Electric engineers worked with San Francisco Public Utilities engineers in designing the electrical system for the airport itself, and with Clyde E. Bentley, consulting engineer with associates, on the system for the terminal building. The building was designed by W. P. Day, San Francisco, architect and structural engineer for the project. G-E 1500-kva master unit substations were used as key "building blocks." Initial system investment was kept low, yet future demands planned for, by this provision for adding small blocks of power capacity only as more power is needed.

Years of engineering experience and skill were made available by G.E. to the customer, consulting engineers, architect, and electrical contractor Abbett Electric Corporation of San Francisco. When planning installed equipment or electrification of tools for heavy construction projects remember G-E equipment is backed by G-E engineering help in application, installation and service. This help is available to you through any G-E Apparatus Sales Office, or by writing General Electric Co., Section 664-35, Schenectady, N. Y.

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READER COMMENT

Congested Freeways

SIR: In answer to the questions raised by Larry Smith concerning congestion that has developed on the new freeways in the Los Angeles region (ENR April 28, p. 8), I would say that the congestion, lack of flexibility, etc. of which he speaks is inherent in the use of a system of auto highways when used by themselves as instruments of mass transportation. This facility is simply not adapted to this use in the form usually employed.

The proper solution to this problem is to devise more efficient and more flexible means of handling peak loads, which are the most difficult, and to handle large blocks of concentrated traffic, which cause undue delays in highway travel and cause undue cost.

Such a design involves the design of a properly integrated system of freeways, local roads, rapid transit and other facilities. No one device, by itself, is adequate in a modern city. Furthermore there is no instance known to this writer in which the various municipal authorities involved in these several portions of the transportation plant ever joined forces.

The design of such a coordinated highway-rapid transit system and accessories is not as simple as highway design since the unit load in the one case is a person and in the other is a vehicle which as far as the designer is concerned need not even have a person in it. Furthermore the complex integrated system will produce capacity—peak and base—at lower cost and higher degree of convenience than the highway alone.

Until state highway departments and city public-works departments coordinate their highway planning for adequate rapid-transit facilities, congestion always will develop on such freeways as those within the city limits of Los Angeles.

JOHN G. KNEILING
Staten Island, N. Y.

Trench-Type Tunnels

SIR: We note in the March 31 issue of Engineering News-Record, p. 104, that the Patapsco vehicular tunnel is described as the first twin-tube trench-type vehicular tunnel anywhere.

May we invite your attention to the fact that the Harvey Tunnel at Harvey, Louisiana, which is now under construction by R. P. Farnsworth & Co., Inc., and the Silas Mason Company, and designed by Palmer and Ba-

(*Continued on page 14*)

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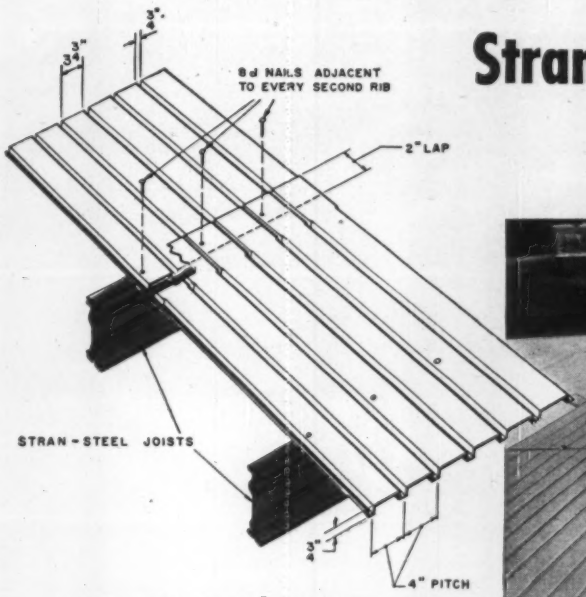

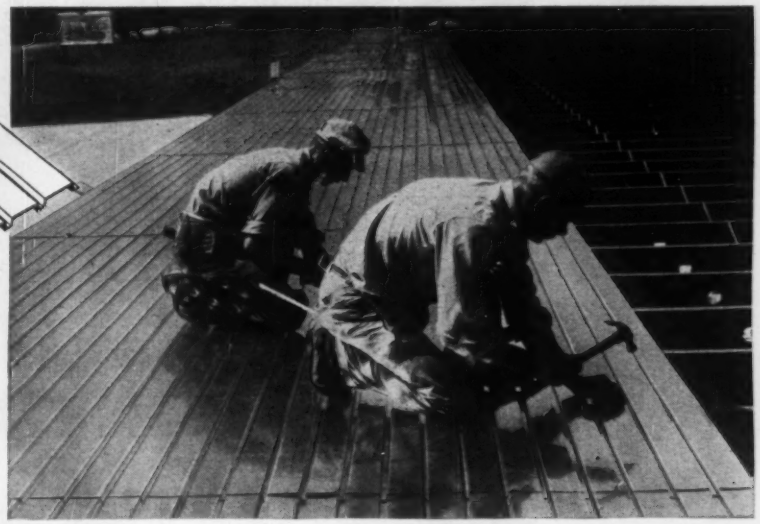

Woodland Acres Shopping Center in Green's Bayou, Texas, utilizes 26-ga. Stran-Steel galvanized roof deck nailed to 9" Stran-Steel joists, on 24" centers. Built-up roof was applied over ½" fiber glass insulation. Architects: DUNAWAY AND JONES, Houston. Distributor: BUIE BLDG. MATERIAL CO., Houston.

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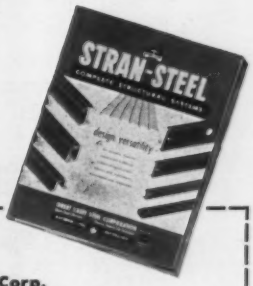
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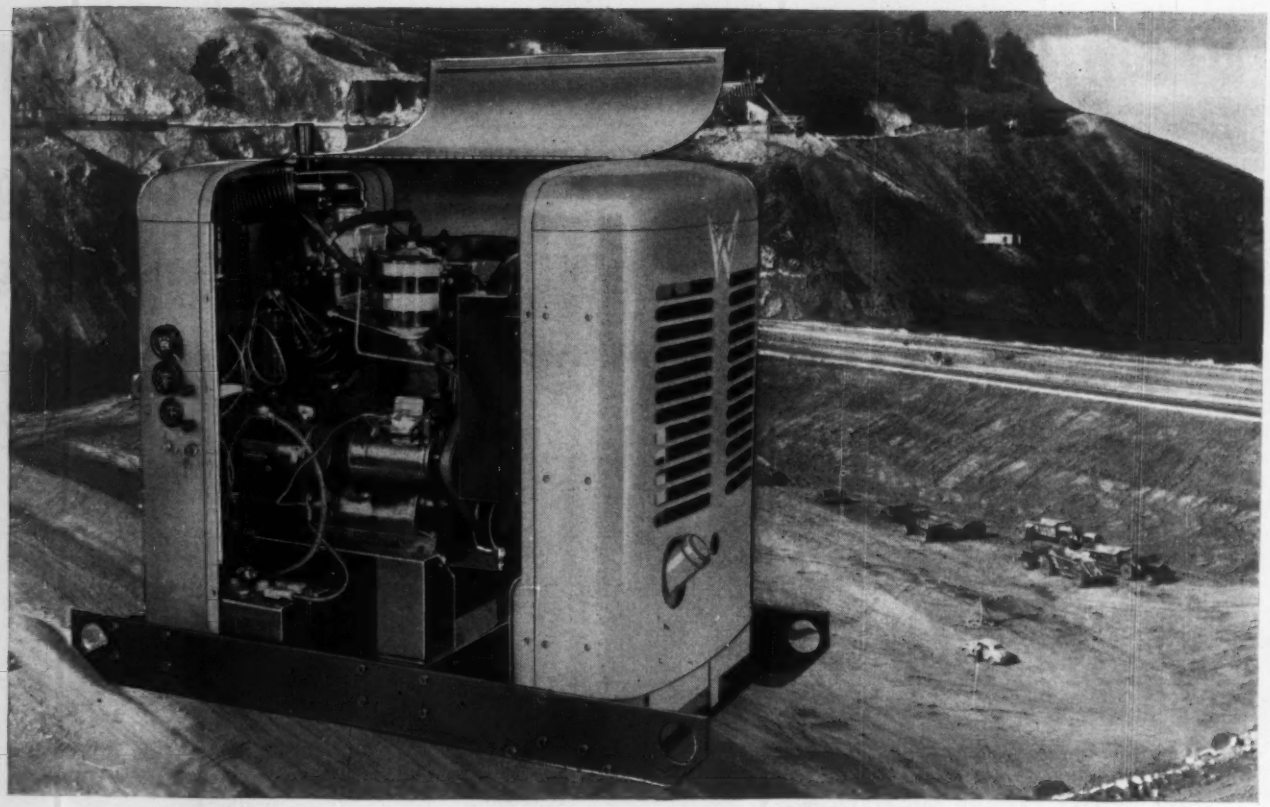

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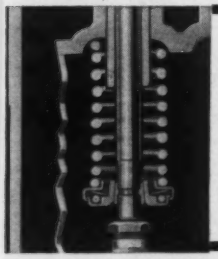

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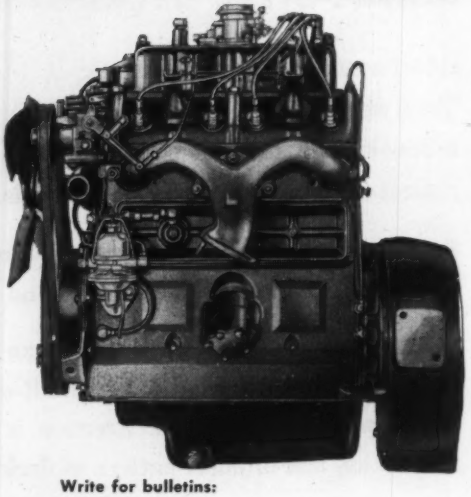

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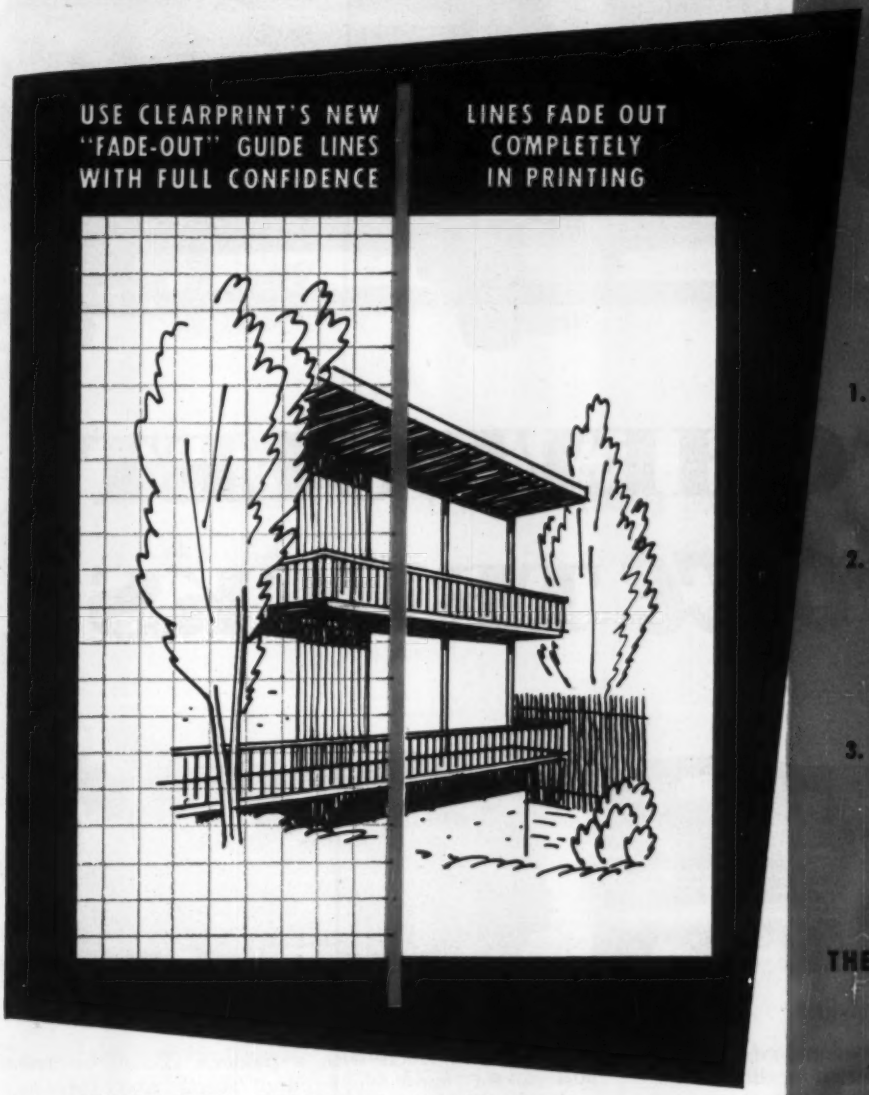

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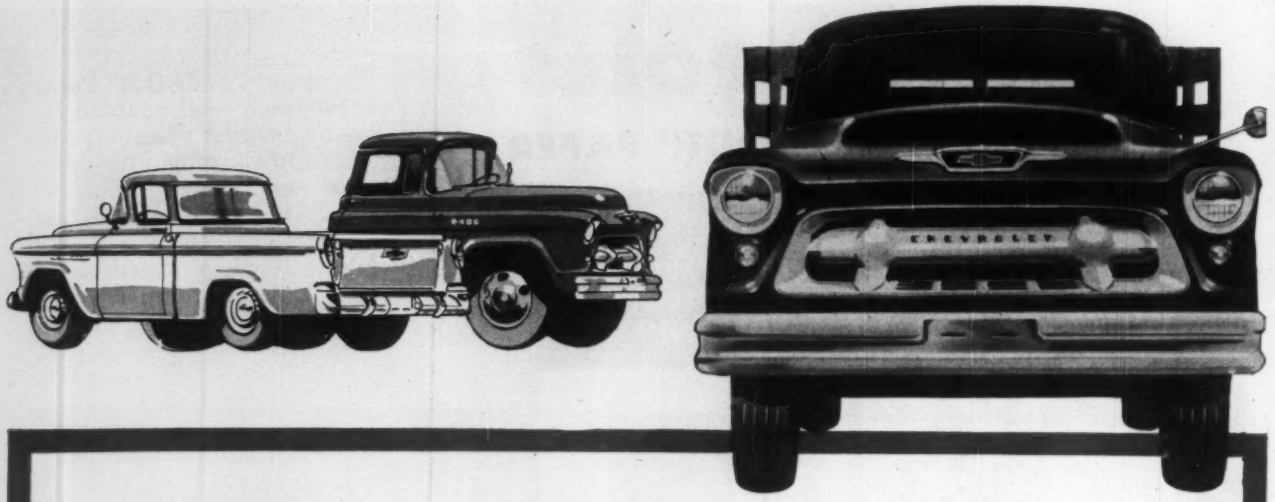
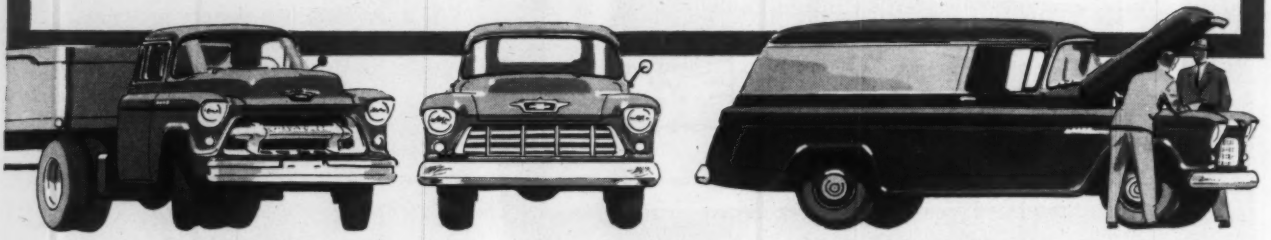


NEW CHEVROLET *Task-Force* TRUCKS



A new kind of truck styling

It's Work-Styling—an exclusive development in truck design with two distinctively different styling treatments. On the job, your truck "looks the part" and becomes a profitable advertisement on wheels for you and your business.

New "high-voltage" engines

Six of them! Each with a modern 12-volt electrical system for surer year-round starts and increased generator capacity—plus a long list of other new advances. They're the last word in smooth, quiet and thrifty truck power.

New frames of standard width

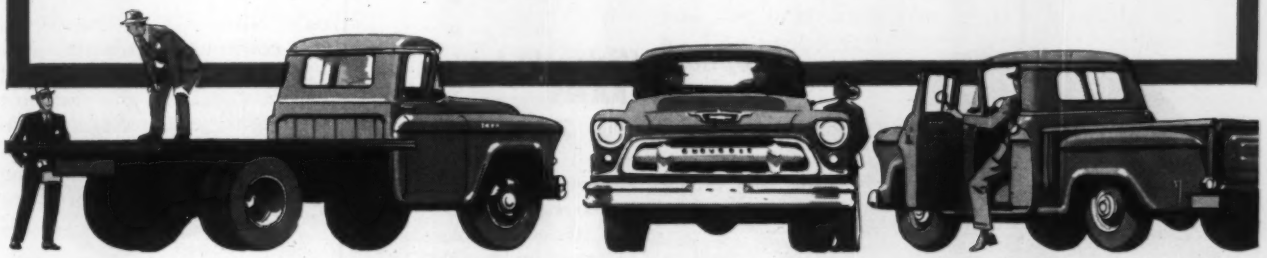
All models now have new ladder-type frames with full-length parallel side members for greater rigidity and longer truck life. Now, too, these newly designed Chevrolet frames are all 34 inches wide to accommodate special body installations.

New Overdrive—Truck Hydra-Matic

For even bigger gas savings and less engine wear, new Overdrive is available on all ½-ton models at extra cost. Hydra-Matic, Chevrolet's thrifty automatic truck transmission, is optional on ½-, ¾- and 1-ton models at extra cost.

CHEVROLET

They're setting the pace for the whole industry! Take a good look at them here... in the showroom . . . on the road. It won't take you long to discover that these are the most modern trucks on any job.

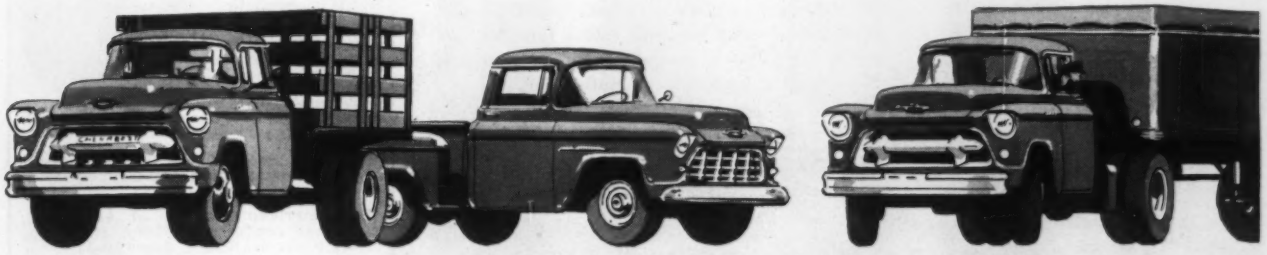


New 18,000-lb. G.V.W. capacity

The highest ever for Chevrolet! And that's good news for everyone with heavy hauling to do. For with this hefty hike to 18,000 pounds Gross Vehicle Weight, Chevrolet brings its famous economy and dependability to new heavy-duty fields.

A cab as new as the view

New Sweep-Sight windshield—plus more glass all around—for a wider, safer view. New High-Level ventilation for greater driver comfort. New softer seats. New, more durable cab construction. New concealed Safety Steps that stay clear in all weather.



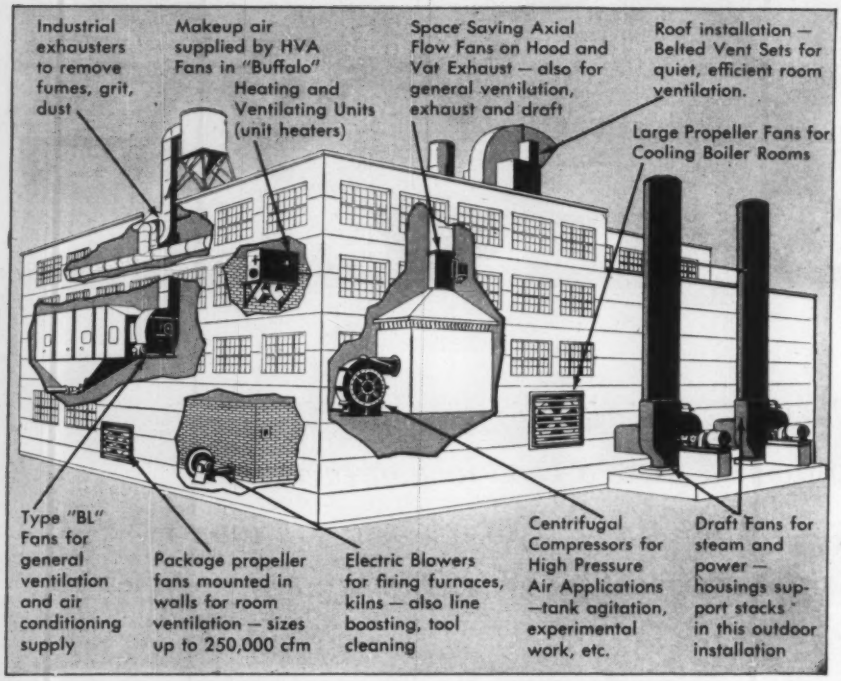
Power Brakes standard on 2-ton models

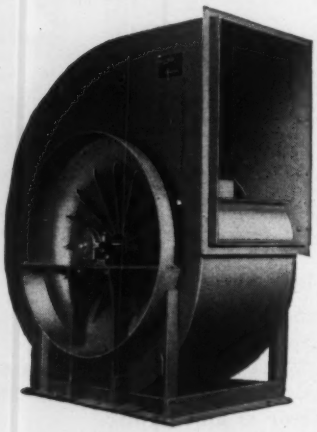
This great power helper increases driving safety . . . reduces driver effort. You stop with up to one-third less pedal pressure—and you do it right now! Chevrolet Power Brakes are standard equipment on 2-ton models —optional at extra cost on all others.

There's more to tell, a lot more

Stop in and let your Chevrolet dealer give you the complete "all-new" story. There are many more good things to discover about the New Chevrolet Task-Force Trucks! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

AIR... BREATH-OF-LIFE FOR THE PLANT!


Industrial exhausters to remove fumes, grit, dust
Makeup air supplied by HVA Fans in "Buffalo" Heating and Ventilating Units (unit heaters)
Space Saving Axial Flow Fans on Hood and Vat Exhaust — also for general ventilation, exhaust and draft
Roof installation — Belted Vent Sets for quiet, efficient room ventilation.
Large Propeller Fans for Cooling Boiler Rooms
Type "BL" Fans for general ventilation and air conditioning supply
Package propeller fans mounted in walls for room ventilation — sizes up to 250,000 cfm
Electric Blowers for firing furnaces, kilns — also line boosting, tool cleaning
Centrifugal Compressors for High Pressure Air Applications —tank agitation, experimental work, etc.
Draft Fans for steam and power — housings support stacks in this outdoor installation



The "Buffalo" Type "BL" Limit-Load Ventilating Fan. Specified for many of the industry's largest ventilating and air conditioning jobs, it is the finest fan we have ever offered. Available in closely graduated capacities from 1000 cfm to 500,000 cfm. Write for Bulletin F-100 for full details.

. . . supplied efficiently by "Buffalo" FANS industry's choice for 78 years

Whatever your product, air goes into it! The air that makes workers more alert and productive — the air that gives you efficient combustion — the air that's used to remove undesirable substances — the air you warm with or cool with — is your plant's breath-of-life.

Above are just a few of the ways in which "Buffalo" fans help a plant to breathe. There's a fan in this complete line for any job you may have for air. And it's well to remember that all makes of fans are *not* alike. There's a great deal to the science of making a fan that will give you permanently good performance. From our 78 years, we know what's practical and what isn't — what must go into a fan. We call it the "Q" Factor* — the "extra" that makes the user glad he specified "Buffalo".

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

"Buffalo"

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Publishers of "FAN ENGINEERING" Handbook

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FORCED DRAFT COOLING HEATING PRESSURE BLOWING

READER COMMENT

ker, Inc., is a four-lane twin-tube trench-type vehicular tunnel.

The fact that this is our second letter to you within several months suggesting corrections is merely evidence of the fact that we are avid readers of your publication.

WAYNE F. PALMER
President, Palmer & Baker, Inc.
Mobile, Ala.

Queries From Congress

SIR: Will you kindly forward to my office information concerning employment in the building trades, particularly a list of the firms operating overseas.

DANIEL J. FLOOD
Congressman, 11th District
Pennsylvania

SIR: We understand that from time to time you issue a list of American contractors engaged in overseas construction work. If this is so, would you please send us several copies of this list?

E. L. BARTLETT
Delegate from Alaska

[EDITOR'S NOTE: The "Americans Abroad" construction reports published in Engineering News-Record and Construction Daily give the most complete up-to-date source of information on where American consulting engineers and contractors are working around the world. You can keep your own list by watching these news items as they are published.]

CALENDAR

Air Pollution Control Association, annual meeting, Detroit, Mich., May 22-26.

National Rivers and Harbors Congress, national convention, Mayflower Hotel, Washington, D. C., May 30-June 1.

National Society of Professional Engineers, annual meeting, Bellevue Stratford Hotel, Philadelphia, June 2-4.

Construction Industries Exposition and Home Show, Pan Pacific Auditorium, Los Angeles, Calif., June 9-19.

American Water Works Association, convention. Conrad Hilton Hotel, Chicago, June 12-17.

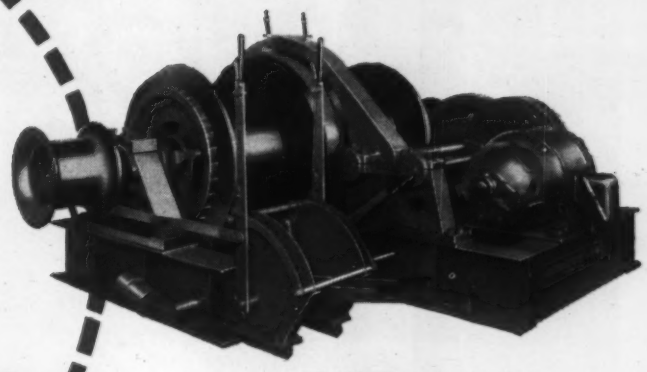
American Society of Civil Engineers, Spring convention, Hotel Jefferson, St. Louis, June 14-17.

The American Institute of Architects, annual convention, Hotel Radisson, Minneapolis, Minn., June 20-24.

American Society for Engineering Education, annual meeting, Pennsylvania State University, State College, Pa., June 20-24.

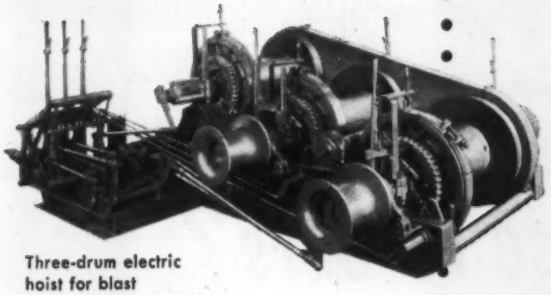
American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26-July 1.

Special purpose HOISTS... backed by very special EXPERIENCE

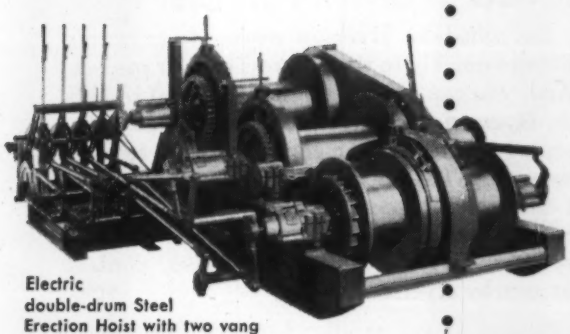


Double-drum electric winch for handling anchor lines

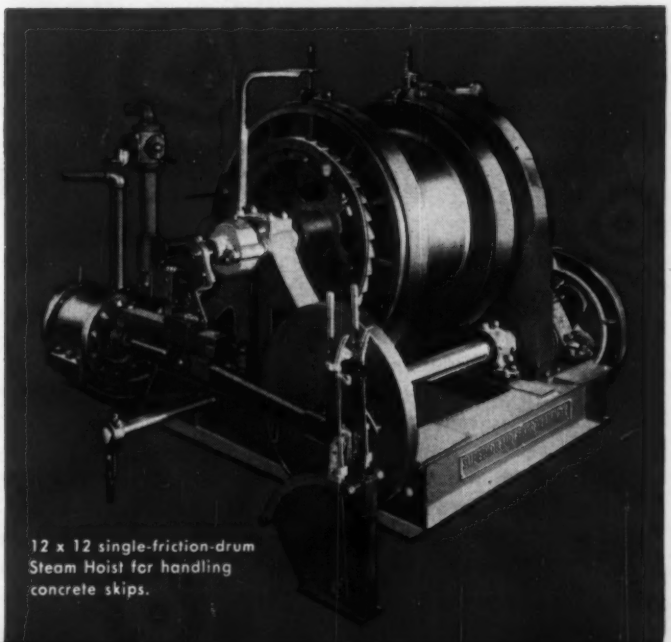
When you need hoisting or hauling equipment of any kind...for any purpose...always specify Lidgerwood. Behind the Lidgerwood name stand many years of experience and the construction of many thousands of hoists. Let us put this vast experience to work for you the next time you have a hoisting or hauling problem.



Three-drum electric hoist for blast furnace erection work



Electric double-drum Steel Erection Hoist with two vang drums and clutched winchhead



12 x 12 single-friction-drum Steam Hoist for handling concrete skips.

Designers and Builders of Mine, Shaft, Incline, Standard Contractor's and Special Hoists of every description; Carpullers; Steam, Electric and Gas Marine Deck Auxiliary Machinery.

WRITE FOR BULLETINS AND CATALOGS

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MAIN OFFICE AND WORKS – SUPERIOR, WISCONSIN

NEW YORK OFFICE – 7 Dey St., New York 7, N. Y.

"Where are those re-bars?

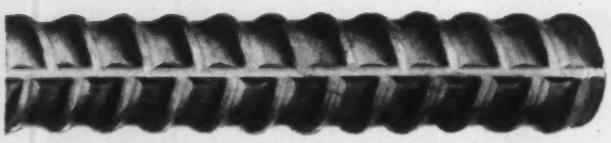
the boss should have ordered from Ryerson"

Re-bar deliveries delayed? Men and machines idle because of unreliable steel deliveries can mean the difference between a profitable or unprofitable job.

You avoid delays—and the inconvenience of having next week's steel piled up on the job site, as well—when you entrust your schedule to Ryerson reinforcing service. Ryerson has the world's largest steel stocks—the most extensive facilities—all smoothly organized to handle your requirements with absolute dependability. You set the schedule; Ryerson meets it, adjusting deliveries quickly to the progress of your project.

And, you can depend on the quality of re-bars from Ryerson, always. All are high-bond type, designed for greater grip and guaranteed to meet or exceed ASTM Spec. A 305. All are accurately cut and bent—tagged for quick placement.

So, for quick dependable deliveries of re-bars, wire mesh—every construction steel, contact your nearby Ryerson plant.



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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

ASPHALT'S NEW HOME—A paving derby—claimed to have set a record for asphalt surfacing—highlighted the May 5 dedication of the Asphalt Institute's new headquarters on the University of Maryland campus. Surfacing of a 383-ft long, 24-ft wide street in front of the new building was accomplished in 24 min. 35 sec.—1,021 sq yd at the rate of 2,492 sq yd per hour—by a crew of 28 men from the Corson-Gruman Co., Washington, D. C., operating two spreaders, two rollers and 14 trucks. The institute moved in January from New York to its new headquarters at the U. of M., where its research is being conducted.

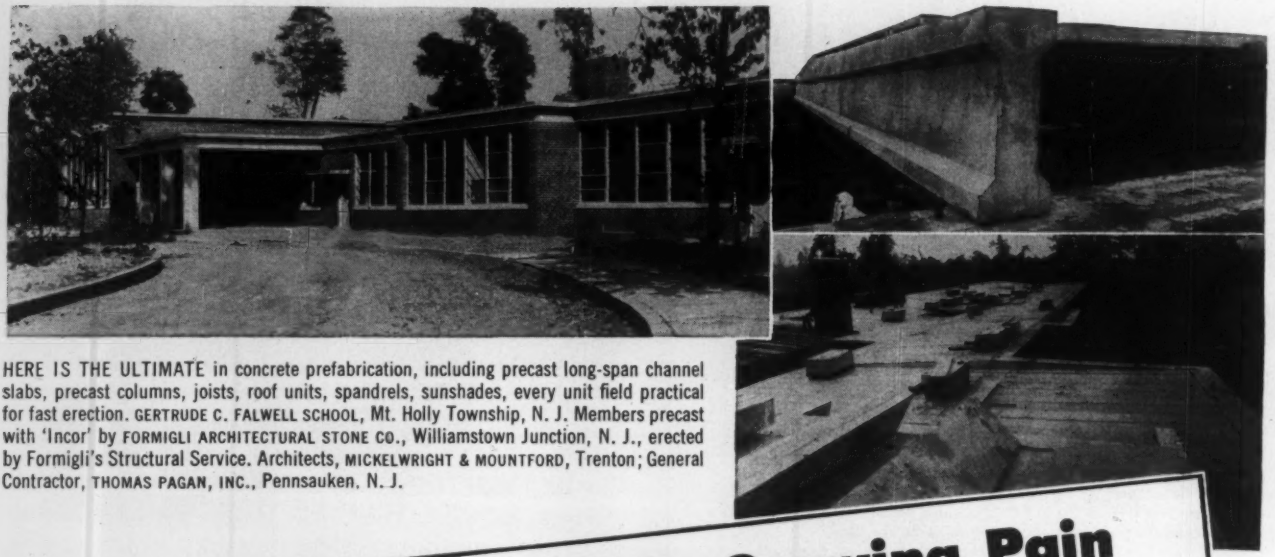
NEW TYPE HANGAR—Bids were to be opened this week for construction of a hangar with a cable-suspended concrete roof. The 816x160-ft facility, capable of accommodating nine 4-engine and two twin-engine planes, will be built for Trans World Airlines at Mid-Continent International Airport, Kansas City. Meanwhile, the Port of New York Authority has announced that it is preparing plans for an eight-bay hangar of the same type, to cover 230,000 sq ft, at New York International Airport.

CLOSED SHOP FOR BIDDERS?—Opposition has been hastily organized in the lower house of the Florida legislature to block a bill that apparently would set up a virtual closed shop for contractors bidding on state road contracts. The bill slid through the State Senate without attracting attention.

Under terms of the bill, the governor would name a three-man state board of public road contractors to license bidders on any road contract over $25,000. The real "sleeper" in the bill, its opponents point out, is a provision that members of the board be limited to contractors "who have been engaged in road, bridge or sewer construction in Florida for at least five years." Such a provision makes it easy, they add, to lock out out-of-state bidders—and at a time when the state is launching its big turnpike program.

THE KAISER DAM ISSUE—Parliamentary committee hearings in Ottawa on a bill that would give the Canadian federal government wide control over provincial hydro developments haven't been encouraging to British Columbia's hopes for starting negotiations on Kaiser Aluminum Corp's. proposal to build a $25-million storage dam. The proposed project, on the Columbia River's lower Arrow Lakes at Castlegar, would feed generators at Bonneville, Wash.

A TALL TOWER FOR TEXAS—The trend toward higher TV towers in flat country areas continues. Now under construction in Dallas, Texas, is one whose antennas will reach 1,521 ft only about 50 ft below the record 1,572 ft, held by station KWTV in Oklahoma City (ENR Sept. 30, 1954, p. 31).



HERE IS THE ULTIMATE in concrete prefabrication, including precast long-span channel slabs, precast columns, joists, roof units, spandrels, sunshades, every unit field practical for fast erection. GERTRUDE C. FALWELL SCHOOL, Mt. Holly Township, N. J. Members precast with 'Incor' by FORMIGLI ARCHITECTURAL STONE CO., Williamstown Junction, N. J., erected by Formigli's Structural Service. Architects, MICKELWRIGHT & MOUNTFORD, Trenton; General Contractor, THOMAS PAGAN, INC., Pennsauken, N. J.

Rx for a Nationwide Growing Pain

Concrete Provides Time- and Money-Saving Solution for Critical School Shortage

★

AMERICA has a case of growing pains, and nowhere more so than with schools. Sound design and building know-how is avoiding skimpy construction in meeting urgent need. Careful analysis almost invariably shows that concrete provides utmost value in attractive, durable, fire-safe structures.

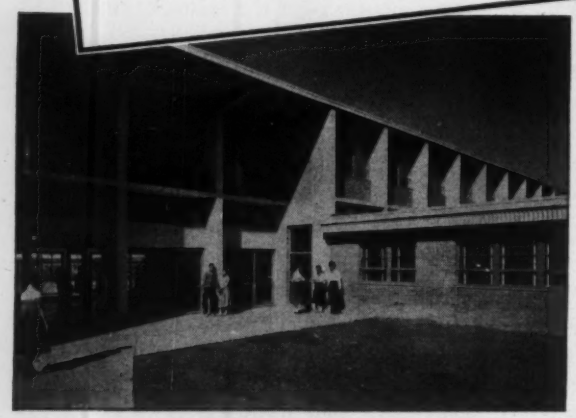
Such is concrete's flexibility that it is possible to meet almost any school-building budget and assure a structure of highest quality from every standpoint. Two examples:

One represents prefabricated concrete construction at its best, with factory-made, quality-controlled members, produced to closest tolerances, for fast erection with minimum supervision . . . quality concrete elements, produced at assembly-line speed—and economy—with 'Incor'* 24-Hour Cement.

The other is a reinforced concrete school whose outstanding architectural treatment expresses in clean, uncluttered line the sound structural values which make concrete the first choice for schools.

Two of many fine, new schools, built with Lone Star Cements, providing the finest in modern construction at minimum cost, initially and through the years.

*Reg. U.S. Pat. Off.



WEST CHARLOTTE HIGH SCHOOL, Charlotte, N. C., is an outstanding example of attractive contemporary design in concrete. Vertical lines of exposed columns lend interest to the façade of this beautiful, reinforced-concrete structure, which well deserves its merit award as a national contest winner. Architects, GRAVES & TOY; General Contractor, C. D. SPANGLER CONSTRUCTION CO., INC.; Ready-Mix Lone Star Cement Concrete supplied by JOHNSON McMILLAN CONCRETE CO., INC.—all of Charlotte.

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WASHINGTON OBSERVER

New armory construction around the country to accommodate reserve forces is part of the Administration's military program now before Congress. Details on what kind of construction will be needed have yet to be made, but the program will be substantial.

The new reserve needs contained in the legislation foresee a 2,900,000 man force by 1960, and the Pentagon says training facilities are inadequate to handle that many. At present, the U.S. has only about 700,000 reservists. The House Armed Services Committee has approved a $1-billion expansion of facilities, with a $250-million a year limitation on expenditures. The program has a good chance of passage this year.

•

Building of dehumidified warehouses to store reserve tools and equipment has been delayed. All the money voted so far under the reserve tool program has been spent for tools and equipment. Last year, Pentagon officials had given the impression that considerable money would be used to build special warehouses. These warehouses would store tools not needed currently for defense production. Another $100 million is being appropriated for fiscal 1956, and until the spending outlays are made you won't know whether new warehouses are included.

•

Apartment vacancies are being checked by the Bureau of the Census. Questionnaires are going out this week to managers of large apartment houses and developments. Results will be compiled within the next few weeks. The survey will be available to builders making plans for new construction.

•

Housing starts for April indicate a slight leveling off. You can expect that fact to influence government policy on whether to tighten the reins on mortgage credit. Housing is regarded by the Administration as a bulwark of economic recovery but also as worth close watching to catch any speculative bubble. The Administration welcomes April's slight leveling and feels housing activity is sound.

•

The dispute over the Administration's "partnership" program for public works is shifting to the House Government Operations Committee. Watch it: The committee includes some of the most vocal opponents of the partnership idea in Congress.

•

The Senate's version of the stepped-up highway building program has some new features besides its recommendation of a 90% federal-10% state matching fund formula for the interstate system. Under the formula, some $12.25 billion in federal funds would be provided over a five-year period beginning with fiscal 1956, which begins this June 30.

Truck-weight limitations on the interstate system would cut grants to states that do not abide by provisions of the new legislation. The bill says no federal funds will go to states that permit larger sizes and weights than they allowed on May 1, 1955, or the recommendations of the American Assn. of State Highway Officials adopted in April 1946—whichever is least restrictive to the truckers.

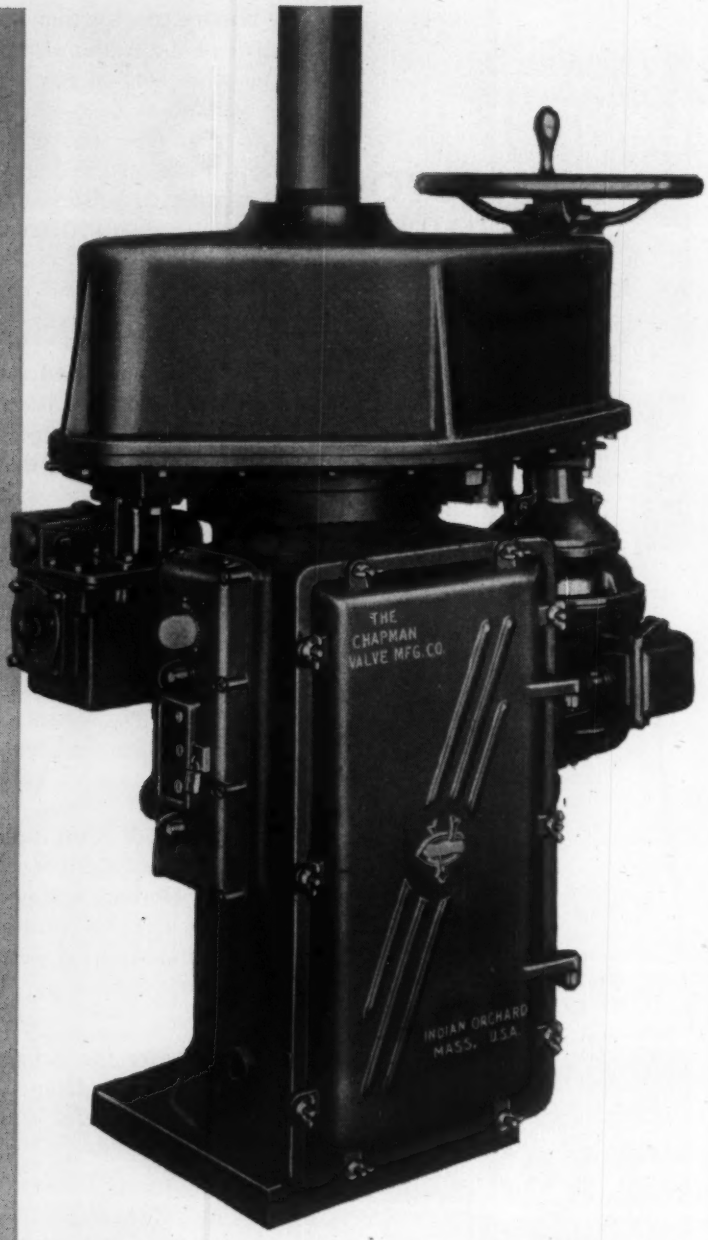
The Senate bill also authorizes $332 million for roads on federal land in national parks and forests, and the like.

It directs the Secretary of Commerce to step up road tests of the Highway Research Board and report to Congress new recommendations on maximum sizes and weights for highway vehicles.

It permits federal reimbursement of half the cost of relocation of utility facilities along the federal-aid system where present state law now requires the entire cost to be borne by the utilities.

Fewer Parts Mean Greater Dependability

Floorstand Motor Unit . . . control panel, motor, limit switch and push button station.



Simple, durable mechanism of Chapman's Motor Unit. Handwheel remains stationary during motor operation.

IN CHAPMAN MOTOR UNITS

Chapman's simple and rugged Motor Unit gives accurate, trouble-free control of large valves and sluice gates. It has approximately *half as many parts* as any other unit. Its simplified design, low speed motors and low-ratio, stubtooth gears combine to give positive operation without drift, in *any* position and under all conditions.

Installation is fast and simple. The floorstand unit comes completely wired, ready to connect to leads. Limit switch has micrometer adjustment for exact pre-setting for seating tightness. Motor Units operate smoothly under the most adverse conditions. All units are weather-proof and steam-tight. Write today for *new* Catalog 51.

The Chapman Valve Manufacturing Co.

INDIAN ORCHARD, MASSACHUSETTS

Bidders Will Do Well to Watch Their Costs

Price trends and current wage bargaining show contractors will pay more in '55 for . . .

An ENR Staff Report

The booming heavy construction industry must now reckon with a sharp upward trend in costs of materials, equipment and labor.

Advancing prices affecting contractors' costs over the past five months plus a developing pattern of higher wage rates are particularly foreboding at this time. For the sharp bidding on many types of heavy construction that became prevalent about two years ago persists despite the record pace being set by contract awards. Stiff competition continues, yielding slim profits for many contractors and bargain prices for many owners.

Behavior of the price indexes since the turn of the year has been in sharp contrast to the stability of materials and equipment prices noted this time last year. But, whereas contract awards got off to a disappointing start in 1954, they got off to a flying start, this year.

Labor contract negotiations won't be in full swing until later this spring but on the basis of settlements reached in the past few weeks bigger increases than last year can be counted upon. With this season's negotiations getting under way amid an unprecedented volume of work, the unions' bargaining position is unusually favorable.

Combined upward movement of materials prices and wage rates already has pushed ENR's Construction Cost and Building Cost Indexes to their highest point. On May 12, they stood at 5.7% above a year ago. The Construction Cost Index has moved ahead 1.7% in the past five months and the Building Cost Index, 1.5%.

This cost trend is gaining momentum, according to the George H. Petit chart analysis (see page 22). A rather gradual gain, however, is indicated.

Following is an appraisal of the factors insofar as they can be seen now that will effect construction's "big three" cost items—materials, equipment and labor—in the future:

• **Materials**—ENR's price index for the construction industry's prime materials—cement, structural steel and lumber—jumped 1.8% since the beginning of this year, compared to a slight 0.4% increase in the same period of 1954.

Cement prices have increased 2.5% in the past five months to push the ENR 20-cities average to 5.4% over May a year ago. Forthcoming wage negotiations in the cement industry may advance them further. In negotiations thus far, workers in 17 plants in Pennsylvania's Lehigh Valley won six to nine cents per hour increase.

Shortages are another factor that may contribute to further cement price increases. Supply difficulties are foreseen in the Midwest, Northwest and Pacific Coast. Indeed, Michigan already is suffering a shortage, which is attributed to a heavy demand for highway projects and the Mackinac Straits Bridge job. Rationing is reported from Benton Harbor, where suppliers have set up an informal allocation plan and city paving work has been cut back 50%.

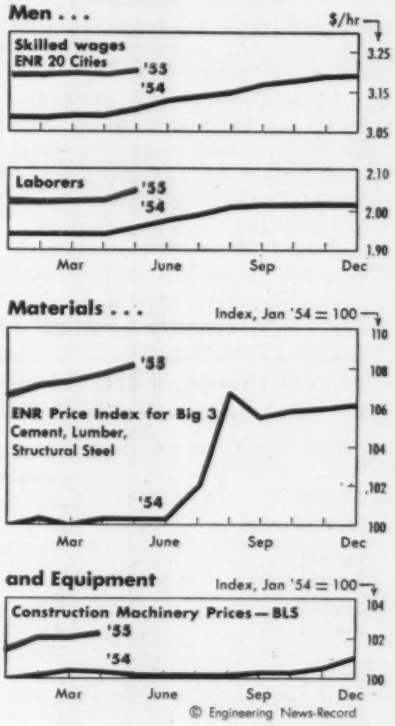
Structural steel prices haven't changed so far this year. However, the 3-mill average price is 3.70% above a year ago, reflecting last summer's rise. Depending on how big a wage increase steel workers are able to win, steel prices are expected to go up anywhere from $4 to $7 per ton this summer. This could mean an increase in structural steel prices at the mill of from 5% to 8%.

Douglas fir prices are up 16% from last May and southern pine 2x4s show a 9% gain. In the past five months, both fir and pine have gone up 4%. A gradual rise over current lumber price levels is generally expected. The housing boom, of course, continues to keep demand high.

• **Equipment**—Prices of construction machinery went up an average of 1.1% during the first four months of this year, according to the Bureau of Labor Statistics primary market index.

This may well prove just the beginning, however.

For, in contrast to last year's slump in March and April, several manufacturers have reported sales going great guns in the past two months. Indeed, according to some sources, a flood of new orders for construction rigs has definitely turned a buyer's market into a seller's market.



If these signs prove valid, it stands to reason that dealers aren't going to be absorbing manufacturers' price increases—not going to be as generous with trade-in allowances.

• **The labor picture**—Some 40 building trades unions in 10 of the 20 cities regularly surveyed by ENR had reached new wage agreements by the end of last week. Here are the results (fringe benefits included) compared to last year:

Twenty-one unions obtained bigger increases than last year by an average of 4.5 cents. These increases ranged from 7.5 to 22 cents. The increase was 10 cents in 43% of the agreements; 7.5 cents in 29%.

Negotiations in the 19 other cases resulted in no increase in one instance; the same increase as last year in nine agreements and a smaller increase than last year in nine new contracts.

A cross-section of new wage developments in the past week indicates

. . . Materials and equipment prices up

that pressure for further increases is building up. Here's a sampling:

In Rochester, N. Y.—1,400 carpenters refused an offer of a 10-cent boost and went on strike.

In Cleveland, Ohio—four trades signed two-year contracts providing for 7.5-cent increases for each year but homebuilders were holding out.

In Philadelphia—four trades accepted 5- to 10-cent boosts, with plumbers getting a 5-cent training fund contribution. Carpenters have a tentitive two-year contract, providing for a 10-cent increase now and 8.5 cents more next year.

In Minneapolis and St. Paul—five trades got two-year contracts, providing for a 10-cent raise each year.

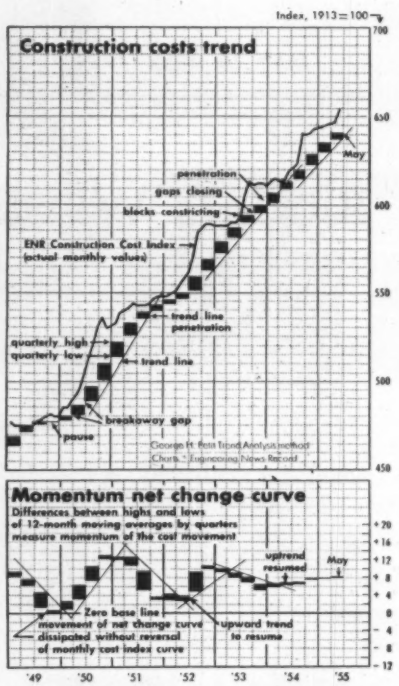
In St. Louis—four trades signed two-year contracts adding 10 to 12.5 cents to basic rates.

Results of contract negotiations to date set no pattern as to allocation of wage increases between basic rates and fringe benefits. Some increases have been for one, some for another, and some have been divided.

• **Longer contracts**—As of now, there appears to be a growing tendency to go in for two-year contracts—specifying a fixed increase for each of the two years.

From the industry's standpoint, the longer contracts are somewhat controversial. Contractors often look with favor on them as a means of achieving some stability in pricing. On the other hand, by projecting wages as a fixed cost further into the future, the longer contracts are looked upon in some quarters as unnecessarily aiding the growth of the wage structure.

Efforts to dissuade contractors from committing themselves too far in the future have been made by chapters of the Associated General Contractors in both California and Arizona. As an alternative, these chapters tried without success to introduce the cost-of-living escalator clauses into new contracts. Although one California unit got labor to agree to a joint committee study of the possibility of its use next year, escalator clauses have aroused almost no interest. And, with the BLS Consumer Price Index now down to 114.3 from a July 1954 high of 115.2, unions understandably have lost a lot of their post-war enthusiasm for the gimmick.



Price Movements Livelier This Year Than Last

Percent change in ENR 20-cities average for key construction materials, wages

	12 months ending May		First five months		One month Apr.-May	
MATERIALS	Last Year	This Year	Last Year	This Year	Last Year	This Year
Cement	+1.8	**+5.4**	+1.0	**+2.5**	+0.1	**+0.3**
Structural steel	+6.5	**+3.7**	0.0	**0.0**	0.0	**0.0**
Sand	+2.9	**+4.0**	+2.3	**+3.2**	0.0	**+0.2**
Lumber—Fir	−4.9	**+15.7**	+2.6	**+4.0**	+0.1	**+0.8**
—Pine	−2.9	**+8.7**	−1.3	**+3.9**	−0.1	**+0.6**
Common brick	+2.8	**+1.6**	+0.7	**+1.3**	0.0	**+0.8**
Ready-mix concrete	+2.7	**+3.2**	+0.5	**+1.5**	+0.4	**+0.3**
Structural clay tile	+1.2	**+0.1**	+0.5	−1.2	0.0	**0.0**
WAGES						
Common	+7.5	**+4.3**	+1.7	**+1.5**	+0.9	**+1.2**
Skilled (average)	+5.3	**+3.2**	+0.8	**+0.7**	+0.4	**+0.5**
Bricklayers	+3.1	**+2.7**	+0.6	**+0.5**	+0.4	**+0.5**
Structural ironworkers	+6.5	**+3.7**	+0.9	**+0.6**	+0.2	**+0.4**
Carpenters	+6.8	**+3.1**	+1.2	**+0.9**	+0.6	**+0.7**

Percent change in BLS primary market indexes

	12 months ending April		First four months		One month Mar.-Apr.	
	Last Year	This Year	Last Year	This Year	Last Year	This Year
All commodities (industrial) excl. farm & food	+1.1	**+1.0**	−0.1	**+0.7**	+0.4	**+0.1**
WHAT CONSTRUCTION MEN BUY						
Rubber & products	+0.2	**+10.6**	+0.2	**+4.8**	+0.1	**+0.2**
Lumber & wood	−4.9	**+5.2**	−1.0	**+1.8**	−0.4	**+0.7**
Metals & products	+1.4	**+4.7**	−0.6	**+2.3**	+0.4	**+0.7**
Machinery & motive	+2.0	**+1.4**	+0.1	**+0.4**	−0.1	**+0.1**
Nonmetallic minerals, structural	+3.3	**+1.2**	0.0	**+0.3**	−0.2	**+0.2**
Building materials	−0.8	**+3.6**	−0.5	**+1.1**	−0.3	**+0.4**
Construction equipment	+2.3	**+1.9**	+0.4	**+1.1**	−0.1	**+0.2**

• **Incidental pressures**—Negotiations in a number of allied fields may result in contributing to the upward trend in building costs. Here are a few examples:

• Workers in Indiana limestone quaries struck last month for wage boosts ranging from 7 to 37 cents per hour.

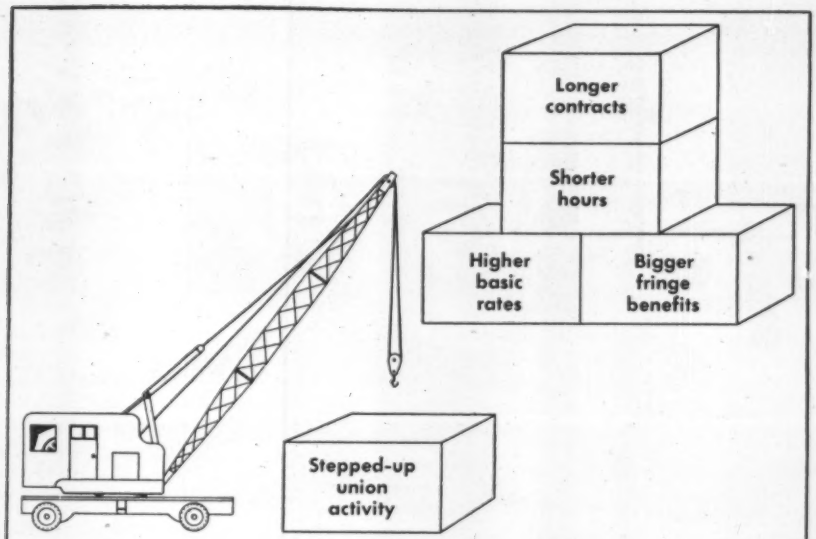
• Building materials truck drivers went on strike in Ohio for an immediate increase of 10 cents.

• In the Pacific Northwest, 3,000 brewery teamsters have won an area-wide pension plan (paid for by employers at a rate of 10 cents an hour). Efforts are being made to extend the plan to cover 250,000 teamsters, including those in construction, over an 11-state area.

• **The homebuilders plights**—Homebuilders have been putting up determined resistance in wage negotiations as competition for the homebuilding dollar grows keener despite the expanding market. But, generally they're being swept along with the tide.

Three factors, in particular, are giv-

. . . Labor contributes to higher costs



The Pressure's on to Make the Wage Structure Higher

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ing the homebuilders trouble laborwise:

- The necessity, in some areas, of operating under contracts negotiated by industrial and commercial builders.
- A stepped-up drive by the AFL building trades to push unionization among workers in the homebuilding field.
- Danger of getting involved in jurisdictional strife as a result of attempts to make greater use of prefabrication for cutting costs.

Parking Facility Jobs Top $100 Million

Five hundred delegates attending the National Parking Assn. convention in Atlanta last week heard NPA President L. P. Doggett report that association members are engaged in a construction program totaling more than $100 million.

The bulk of this construction for new parking facilities is taking place in high-density commercial areas where parking space is at a premium. As a result, according to NPA officials, modern trends in parking are:

1. Self-parking system—whether on lots or in multi-story garages. Chaning C. Edington of Los Angeles, member of NPA's board of directors, cited three reasons for this trend: cheaper labor costs, customer preference for parking his own car, and faster turnover and higher profits for operators in high-density areas.

2. Mechanical lift and stack garages. New designs now being developed by garagemen include a continuous belt, "helical" parking garage along with electronically controlled, automatic garages 10 to 15 stories high and handling up to 1,000 cars.

Construction costs for these latter systems come high. Cost is generally figured on a per-stall basis and runs anywhere from $1,300 to $2,500, depending on type of equipment used. But the mechanical garages have one prime advantage over the self-park or attended garage—the tax amortization feature. Mechanical garages now being developed by half a dozen companies come under the broad classification of machines rather than structures. And for that reason they can be depreciated at a much faster rate.

One example of mechanical garages is the Minit-Park system now being developed by Alliance Machine Co., Alliance, Ohio. It's an all-steel structure serviced by gantry cranes and costs about $1,300 per parking stall. Consisting of open steel decking and crane lifts, it is completely mechanical in operation. Spacing between parking decks is six and a half feet and car stalls are seven feet wide. Two gantry cranes working parallel can service three tiers of decks at an average cost of two to three cents per car parked compared to 14 cents for manual or attendant parking.

Alliance's Minit-Park Division is working with Grove-Manaugh, a Los Angeles firm of consulting engineers who have developed a system for downtown mechanical parking machines for narrow (60 ft) frontages in high-density areas. This system uses three tiers of decks with two gantry cranes between tiers. The structure is all steel, prefabricated by Minit-Park, and designed to deliver or park one car every 45 seconds. Cost is estimated at $1,500 per car stall, exclusive of land.

"Homes for Korea"

Good-will project seeks to provide 1,000 homes and get Koreans building

The American-Korean Foundation, Inc., and the National Association of Home Builders this week joined hands in a $1.5-million "Homes for Korea" project.

The goal: Money, materials, equipment and on-the-job technical assistance to build dwelling units for 1,000 Republic of Korea families.

The hope: Inspiration for Korean builders to copy American know-how and dig in to replace most of the 600,000 homes shattered by war.

Plans for the international venture in good-will were unveiled Monday in Washington by Gen. James A. Van Fleet, the foundation's honorary chairman for the project and wartime commander of the 8th Army in Korea, and Earl W. Smith, president of NAHB.

Gen. Van Fleet said the Korean government has promised full cooperation. It will provide a site in Seoul, the capital, and expedite all legal clearances required by a non-profit housing authority for the development.

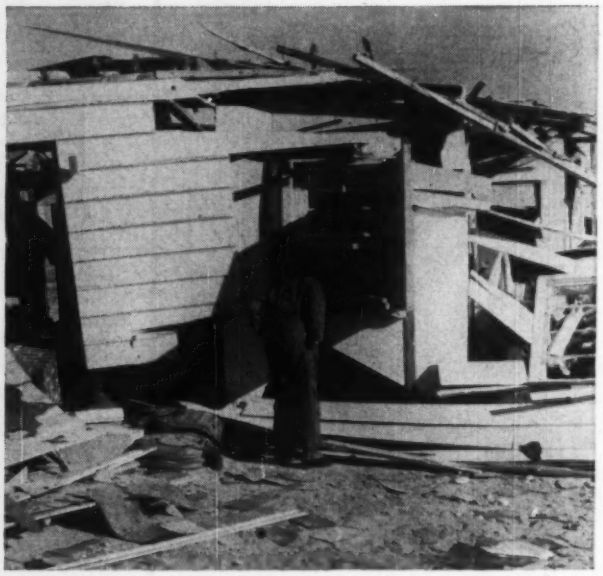
William Zeckendorf of New York, president of Webb & Knapp, conceived the program during a 1953 visit with Gen. Van Fleet in the war-spoiled country. Zeckendorf also developed model plans in consultation with U. S. and Korean architects. The project calls for roughly 500 single-family or duplex dwellings and a like number of multi-story apartment buildings.

"There's no large-scale building now in Korea," Van Fleet said. "Actually, what we're trying to accomplish is sort of a pump-priming, something to get the Koreans started to build more."

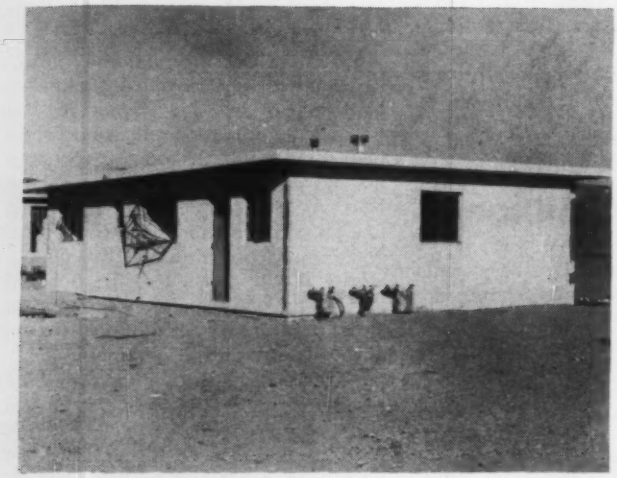
NAHB and the foundation jointly are now circularizing U. S. builders, asking for pledges of money and materials. Smith said glass, hardware and most other materials probably can be shipped from the West Coast to Korea. One exception is cement. Because of a U. S. shortage, he said, this probably will have to be purchased from foreign sources.

This Is What an Atomic Blast Does to . . .

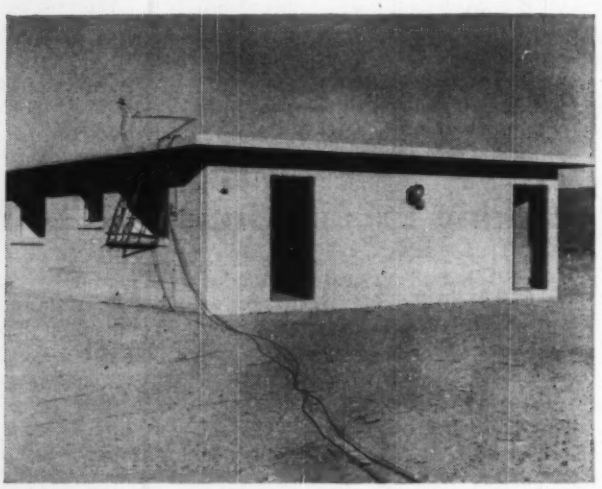
Wood houses . . . GUINEA PIG in May test of atomic-blast effects was this wood-frame house.



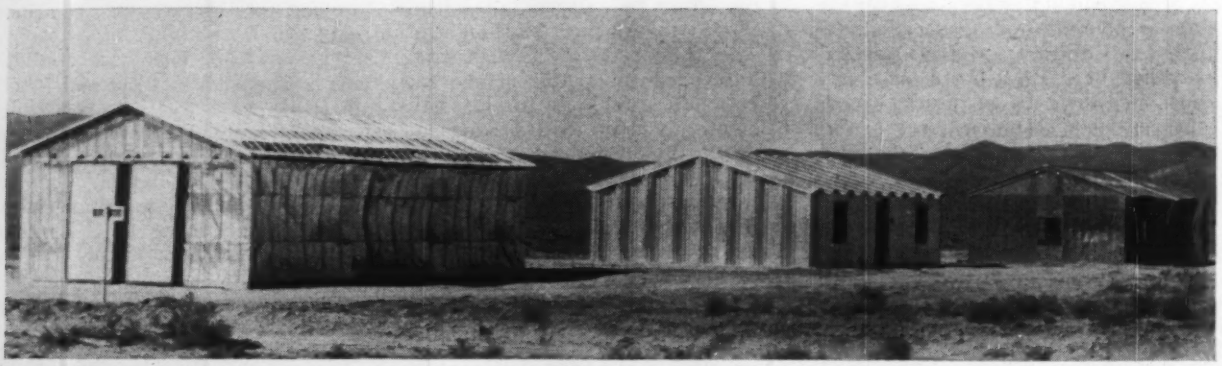
EXPLOSION equivalent to 35,000 tons of TNT reduced it to rubble at 4,700 ft from ground zero.



Concrete houses . . . SLAB CONSTRUCTION of reinforced concrete remained structurally intact at 4,700 ft.



CONCRETE BLOCK HOUSE at the same distance suffered only minor damage (pressures estimated at about 900 psf).



Metal buildings . . . DAMAGED BUT USABLE were three metal industrial buildings located 15,000 ft from the blast. (Inasmuch as no special attempt had been made to design for blast resistance, a similar set suffered severe damage at 6,800 ft.)

Bid Shopping Bill

Senate committee opens hearings on new measure to limit shopping for bids

Congress last week began a new study of legislation to restrict bid shopping. The Senate Judiciary Committee held one day of hearings last week. A second and final hearing was scheduled for this week.

The new legislation has one principal point of defference from the bill that the Judiciary Committees of both houses reported favorably last year but failed to get floor consideration.

This year's bill would not apply to cost-plus-fixed-fee contracts; it would apply only to federal lump-sum contracts of more than $100,000 within the United States or Alaska.

• **List subs**—Under the new proposal, prime contractors would be required to list in their bids the names of the mechanical specialty subcontractors. And they would be required to use the subcontractors listed unless the awarding authority granted written permission for a change. Another difference from last year's proposal is that the prime contractor would not be requirded to list the price submitted by each individual subcontractor. This provision follows closely long-time recommendations of the Associated General Contractors.

In the opening hearing, presided over by Sen. Harley Kilgore, Democrat of West Virginia, chairman of the Judiciary Committee, the bulk of testimony was supplied by mechanical specialty contractors, all of whom supported the bill. Opposition was heard from three government agencies—General Services Administration, the Corps of Engineers and the Atomic Energy Commission.

At the final hearing this week the Associated General Contractors was expected to oppose the legislation as it now stands.

• **Subs like "the last look"**—Paul M. Geary, executive vice president of the National Association of Electrical Contractors, said prime contractors are not solely to blame for the practice of bid shopping.

"Frequently bid shopping is initiated by the subcontractor who solicits disclosure of the low subbid (known in the trade as the "last look") and couples the solicitation with an offer to go a few dollars under the low price," Geary said. "Both sides are equally to blame.

Brig. Gen. David H. Tulley, Assistant Chief of Engineers for military construction, said: "The Defense Department has always taken the position that it should look only to the general contractor for performance of the work, eliminating the necessity of dealing with many contractors."

In a letter to Sen. Kilgore, Edmund F. Mansure, General Services Administration Administrator, said that GSA "has not encountered positive evidence of bid shopping in connection with contracts."

Mansure also objected on grounds that the bill would impose additional administrative burdens on the government.

• **Bill might raise costs**—John A. Derry, director of the Atomic Energy Commission's Division of Construction and Supply, said there was a question as to whether the bill would benefit the commission. "To the extent the bill might restrict competition among subcontractors or might encourage the prime contractors to add contingencies to their bids to provide for any increased costs to them resulting from the requirements of this bill, it would not be beneficial.

A statement by Martin P. Durkin, general president of the United Association of Journeymen and Apprentice Plumbers, was read in support of the legislation.

The committee probably will report the legislation favorably, as it did last session. Its sponsors feel it has a good chance of approval by the Senate this session. That would almost guarantee getting the bill to the floor of the House next session, one sponsor concluded.

Four Groups Investigate Collapse at N. Y. Coliseum

At least four investigations were under way this week to determine the causes of the collapse of more than 10,000 sq ft of formwork for the main exhibit floor of the New York Coliseum.

The collapse occurred early in the afternoon of May 9 as concrete was being cast into the first of 15 bays of a metal-panformed concrete floor (ENR May 12, p. 23). It cost the life of one workman and caused injuries of varying degrees to 68 others.

This week, the New York County District Attorney's office was conducting one investigation of the accident under Assistant District Attorney William H. Loguen and John Farrell, an engineer attached to the office. Additionally, at least three other investigations were under way: by a committee of subcontractors; by labor unions involved; and by architects and engineers in charge of the work for the Triborough Bridge and Tunnel Authority, owner of the structure.

Niagara Power Plan

Army Engineers approve power development plan to cost $424.7 million

The top-level review board of the Army's Corps of Engineers has stamped its approval on a $424.7-million Niagara Falls power development plan that will utilize a twin, covered-tunnel headrace to transport water through the heart of the city of Niagara Falls.

Under heavy pressure from civic organizations and municipal leaders, the Board of Engineers for Rivers and Harbors unanimously recommended that the less costly open-canal development plan be given no further consideration. It would cost $55 million less than the tunnel technique, but it raised a storm of protest in the Cataract City.

The board's recommendations will go to Congress after comments have been obtained from the governors of New York, Ohio and Pennsylvania, where the new Niagara hydroelectric power eventually will be marketed.

Contemplated in the plan adopted by the Engineer board is an initial power development with dependable capacity of 1,723,000 kw.

The plan involves construction of a water intake above the falls near Conners Island, the 25,100-ft-long twin tunnels under the city of Niagara Falls to connect with a 1,512,000-kw powerhouse at Lewiston, below the falls. Included is a pumped-storage reservoir about a mile east of the power plant. Concrete lined, the tunnels would be 46 ft in diameter.

The Rivers and Harbors Board left undecided whether the 1,100-acre reservoir and powerhouse would be linked by a tunnel or a canal. At the reservoir a 333,000-hp pumping-generating plant with a maximum generating capacity of 270,000 kw would be built.

The entire project would divert an average 47,500 cfs of water from the tumbling Niagara River.

The Engineers' report to Congress pointed out that every year of further delay entails a loss of from $8 million to $28 million in net power benefits to the Niagara Frontier and adjoining service area, depending upon the type of financing assumed.

The projects at Niagara Falls and Lewiston are only the initial portion of the Army Engineers' plans for Niagara development. The long-range planning envisions construction of a control dam at the head of the Niagara River, near Buffalo's famed Peace Bridge. With such a dam in operation, Lake Erie itself could be used as a storage reservoir and the dependable capacity of the project could be raised to 2,500,000 kw.

Move Toward Union

Canadian engineers take step to organize union of engineering societies

Canadian engineers took a big step toward realization of a union of the principal engineering societies of Canada last week at the 69th annual meeting of the Engineering Institute of Canada in Toronto.

The council of the institute unanimously approved a report from its committee on confederation which has been studying the practical problems of union with the provincial engineering associations for a year. Membership of the institute and the associations is common to a considerable extent, but there are many practical difficulties in the way of confederation into one organization.

The committee reported that there is substantial support for some form of confederation which will eliminate overlapping activities. The president of the institute will now appoint a smaller committee to negotiate with the Dominion Council, which represents all provincial associations, with a view to developing joint recommendations for a confederated body. If these negotiations go well, the institute might take the necessary action to change its by-laws next year.

• **Power reports**—The technical sessions featured presentation of a number of papers on power. W. B. Lewis, vice president of Atomic Energy of Canada, Ltd., discussed the atomic power plant to be built jointly by his organization and Hydro-Electric Power Commission of Ontario.

Lewis estimated that the plant would cost $15.7 million. "There is now reasonable assurance of low fuel costs of thermal reactors," he said, "and it is expected that reactor costs can be brought to a level at which nuclear power generation is economically competitive with power from other sources."

R. L. Hearn, chairman of Ontario Hydro, traced the history of power development by Canadian agencies at Niagara. He announced that Sir Adam Beck Number Two station will be completed in 1957. This will be the last possible Canadian power development at Niagara.

Otto Holden chief engineer of Ontario Hydro, reported progress on the joint U. S.-Canadian work to improve flow conditions above Niagara Falls. He said excavation of 24,000 cu yd on the American side of the falls had been completed, and excavation of 60,000 cu yd on the Canadian side now in progress.

He said the special control dam under construction on the Canadian side at the head of Goat Island will be an unusual structure in that it is being built in deep, swift water but will stretch across only half of the river. The dam will have 13 sluiceways, each 100 ft wide and closed with submerisible gates of the fish-belly type hinged to sills. Operating machinery will be contained within the piers.

• **Water and sanitation**—A report on groundwater problems in southwestern Ontario coincided with announcement of the appointment of a groundwater committee under A. M. Snider of Waterloo to investigate the extent of the shortage and possible alternative water supply sources.

L. B. Allen, Toronto Commissioner of Public Works, described the city's master plan for a complete sanitation program to cost $80 million over the next 20 years. He said a policy of separate storm and sanitary sewers had been established to reduce the volume to be handled in sewage plants.

R. E. Heartz, president of the Shawinigan Engineering Co., Ltd., of Montreal, was elected president of the institute to succeed D. M. Stephens of Winnipeg. New vice presidents were R. M. Hardy of Edmonton, M. A. Montgomery of Kitchener and R. L. Dunsmore of Montreal.

Honolulu Orders Contractor To Complete Koolau Tunnel

The Honolulu Board of Supervisors has told the firm of E. E. Black, Ltd., to proceed immediately to complete the $4.5-million Koolau mountain traffic tunnel where five men died August 15 in the last of a series of three cave-ins.

Although the Black firm does have a small crew at work, the end of the tunnel is plugged and there has been no boring since the last cave-in (ENR Feb. 24, p. 22).

Black has announced his intention to proceed but has delayed resumption of boring pending agreement with city-county officials on the amount of steel ribbing required to prevent additional cave-ins. He also is seeking a circuit court ruling as to who is responsible for the cave-ins, and who should bear the burden of increased costs for the job.

There also is not yet a firm agreement between the Black firm and city-county officials as to what construction method should be used to complete the tunnel, but most engineers familiar with the problems involved said a multiple-drift method probably will be employed.

Buffalo Gets Plan

Report suggests 10-year, $26.9-million program of harbor improvements

A new $50,000 port study of Buffalo, N. Y., recommends that the city spend $5.5 million for harbor facilities in the next five years. This would be the initial phase of a 10-year, $26.9-million harbor-improvement master plan to put Buffalo in a position to handle St. Lawrence Seaway traffic.

New harbor facilities suggested by Frederic R. Harris, Inc., New York City consulting engineers, would include a 300-ft wide and 475-ft long pier, a warehouse and a number of materials handling installations.

The engineering report also urged a $2-million dredging project to enlarge Buffalo's outer harbor from its present depth of 25 ft to 27 ft.

Three other major steps that would permit the Niagara Frontier to benefit from the Seaway were suggested:

• Organizing a port authority to include the cities of Buffalo, Lackawanna, and Tonawanda as well as adjoining towns.

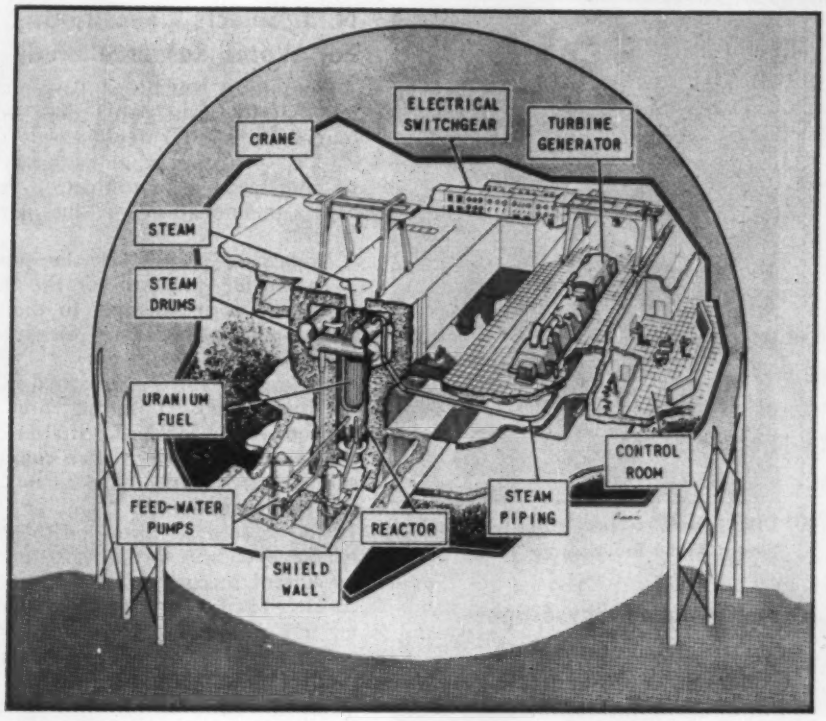
• Offering tax incentives to encourage new industries to build on available industrial sites.

• Establishing favorable freight rates for transportation facilities within the potential tributary area.

Buffalo, according to the report, is the only major Great Lakes city besides Cleveland and Toledo that will be able to handle ocean-going vessels after the Seaway is completed. Fully laden Seaway vessels, says the report, will not be able to reach Detroit until connecting channels between Lakes Huron and Superior and Erie are deepened. Some $40 to $50 million of federally authorized dredging work remains to be done in current channel deepening, and the Corps of Engineers estimates that another $109 million will be needed to dredge channels to the 27-ft depth of the Seaway.

More Hydro Power

Bonneville Power Administration has ordered resumption of interruptible hydroelectric power to 14 industries whose deliveries were cut back for nearly two months. BPA said there probably will be no more interruptions in its power supply for the rest of the season. Heavy rains and snows in April boosted water prospects for the summer and the reservoirs behind Grand Coulee and Hungry Horse Dams are rising more than 1 ft a day. Smaller federal reservoirs were reported rising as much as 3 ft a day.



STEEL SPHERE about 200 ft in dia will enclose the reactor, turbine-generator and related equipment at the atomic power plant proposed for the Chicago area.

Plans for Atomic Power Plant Advance

The boards of directors of the seven firms associated in Nuclear Power Group, Inc., have approved plans for construction of a $45-million nuclear power plant near Chicago.

Application to build the plant is before the Atomic Energy Commission. If it is approved, the plant will be built by General Electric Co. as prime contractor with Bechtel Corp. as engineer-constructor. It will be owned and operated by Commonwealth Edison Co.

The 180,000-kw plant will be the boiling water type. This type reactor was developed at Argonne National Laboratory. It differs from the full-scale pressurized water reactor being built at Shippingport, Pa., in which water is kept under enough pressure so that it does not boil in the reactor.

In the Chicago plant, water in the reactor will boil and form steam. The steam will flow through pipes to the turbine and spin the generator as in a conventional power plant.

In the Shippingport plant, the water will flow through a heat exchanger where steam will be produced to activate the turbine. Elimination of the heat exchanger in the design of the Chicago plant will reduce its cost substantially.

The project will be financed entirely with private funds. Commonwealth Edison will pay $30 million of its cost and will spend an additional $4.5 million on transmission facilities to integrate the plant in its transmission system.

Other members of Nuclear Power Group, Inc., will pay $15 million into a new research corporation over a period of five years to supply the balance of the plant's cost.

Under this financing arrangement, it is estimated that the nuclear plant will produce electricity at a per kwh cost competitive with new coal-fired generating units in Edison's service area.

Nuclear Power Group, Inc., is composed of American Gas and Electric Service Corp., Bechtel Corp., Commonwealth Edison Co., Pacific Gas and Electric Co., Union Electric Co. of Missouri, Central Illinois Light Co. and Illinois Power Co.

Courts Approve Turnpikes

Two turnpike projects won court approval last week.

The Texas Supreme Court cleared the way for the sale of a $58.5-million bond issue by the Texas Turnpike Authority to build a toll highway between Dallas and Fort Worth.

The Florida Supreme Court approved a $74-million bond issue to finance construction of the Hollywood-Fort Pierce leg of a proposed state-long turnpike from Miami to Jacksonville.

Group Wins Again

New York power agency negotiates big contract with second low bidder

The Power Authority of the State of New York skipped the low bidder for construction of the United States half of the Barnhart Island powerhouse on the St. Lawrence River and negotiated a contract with the second low bidder.

When bids were opened, Merritt-Chapman & Scott Corp. of New York and Savin Construction Corp. of East Hartford, Conn., were low with a bid of $36.2 million. Second low was a combine headed by B. Perini & Sons, Inc., of Framingham, Mass., and including Walsh Construction Co., Morrison-Knudsen Co., Inc., Peter Kiewit Sons Co. and Utah Construction Co. (ENR Apr. 21, p. 26).

This group's second low bid was $37.4 million, but the Power Authority negotiated it down to $35.8 million before awarding the contract. The combine is the same organization that won the contract to build Long Sault Dam on a bid of $26 million, a scant $26,187 under the next low bid (ENR Apr. 7, p. 27).

A Power Authority spokesman said the authority's consulting engineers, Uhl, Hall & Rich, recommended award of the powerhouse contract to the second low bidder.

The powerhouse will be a reinforced concrete gravity structure with a maximum height of approximately 160 ft above the foundation. It will be 1,565 ft long.

Combine Submits Low Bid For Seaway Excavation Job

Morrison-Knudsen Co., Inc., of New York and Peter Kiewit Sons Co. of Omaha submitted the apparent low bid for construction of the largest Long Sault Canal excavation contract on the St. Lawrence Seaway (ENR Apr. 7, p. 27).

The two firms bid $6.5 million to excavate approximately 12 million cu yd of earth in the central section of the canal, near Massena, N. Y. The government estimate for the job was $6.3 million.

The canal section will be approximately six miles long. It will have a bottom width of 442 ft and side slopes ranging from 1 on 2 to 1 on 10. Depth of cut will range up to about 50 ft. The canal will afford a controlling depth of 27 ft for shipping.

Specifications also call for construction of about 20,000 linear feet of dikes with about 3,000,000 cu yd of embankments.

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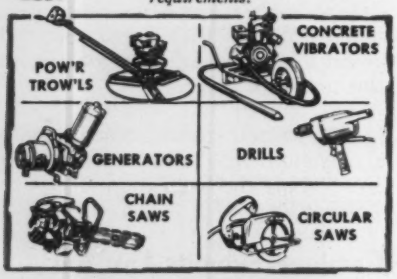

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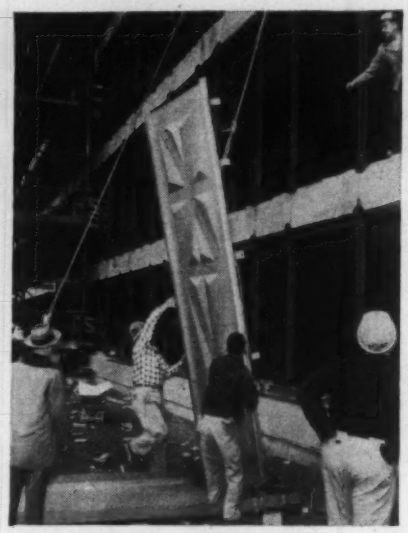

FIRST stainless steel panel goes up on Socony Mobil Building.

Metal-faced Skyscraper Begins to Take Shape

The Socony Mobil Building—New York City's first stainless steel skyscraper and the world's largest metal-faced building—has started to take shape with installation of the first stainless steel panels.

More than 7,000 panels will be used to sheath the 42-story building. Of these, 3,261 will be window panels with a height of 6 ft. 7 in. They will hold 22 sq ft of glass. The rest of the panels —except for a small number in a special size—will measure almost 12 ft in height and slightly more than 4 ft in width. All of the panels are of 20-ga steel.

The building, which occupies an entire mid-Manhattan block near Grand Central Terminal, will have 1,300,000 sq ft of office space. This will make it the world's sixth largest office building and the largest commercial building to be initially fully air conditioned (ENR Dec. 23, 1954, p. 19). The skyscraper's elevator system will be the largest yet installed. It will include 32 electronic-controlled elevators in six banks, and in addition four service elevators.

Because the stainless steel facing will be backed with only four inches of masonry, the walls will weigh about 40 psf as compared with the 140 psf value for conventional 10-12-in. masonry walls.

Erection of structural steel started last November. Completion is scheduled for spring, 1956. Harrison & Abramovitz, with John B. Peterkin as associate, New York City, are the architects. Turner Construction Co. is the general contractor. F. H. Sparks, Inc., is erecting the panels, which were fabricated by Truscon Steel Division of Republic Steel Corp.

N. J. Selects Consultants For Water Resource Study

Consulting engineers have been selected to make what has been termed the most comprehensive survey of New Jersey water resources to be undertaken in more than 30 years with a preliminary report due in two months.

Immediate purpose of the survey is to provide guidance for the state legislature as it attempts to draft a program for a bond issue referendum in November.

A contract has been signed with the New York consulting firm of Tippetts-Abbet-McCarthy-Straton by the state's special legislative commission on water supply. The agreement calls for a preliminary report by July 15 to enable the commission to make recommendations to the legislature at its current session, and a final report by Dec. 15. Ceiling cost for engineering services has been put at $165,000.

Several specialists will be engaged by the consulting firm to augment its staff. Among them will be Leggette, Brashears & Graham, groundwater specialists, New York City and A. A. Casagrande, Harvard University soils and foundations authority.

Pending legislation provides for construction of reservoirs in Round Valley and on the Warton Tract at a cost of $85 million.

U. S. Contractors May Bid For NATO Job in Paris

United States building contractors may bid for the contract to build a $5.-million headquarters building in Paris, France, for the North Atlantic Treaty Organization.

Plans call for the construction of a six-story building to contain 900 offices, restaurant and underground parking space for 400 vehicles (ENR Apr. 28, p. 50).

The U. S. Department of Commerce announced that U. S. firms may bid for the job under NATO's international competitive bidding procedure. Brochures describing this procedure may be obtained from the Commercial Intelligence Division, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C. or from any U. S. Department of Commerce field office.

Construction is scheduled to begin Feb. 1, 1956, and completion is expected about two years later. Firms that want to bid for the job should report their interest before July 1 to NATO headquarters office, Palais de Chaillot, Paris, and should indicate whether or not they have been accredited to bid under NATO's infrastructure program.

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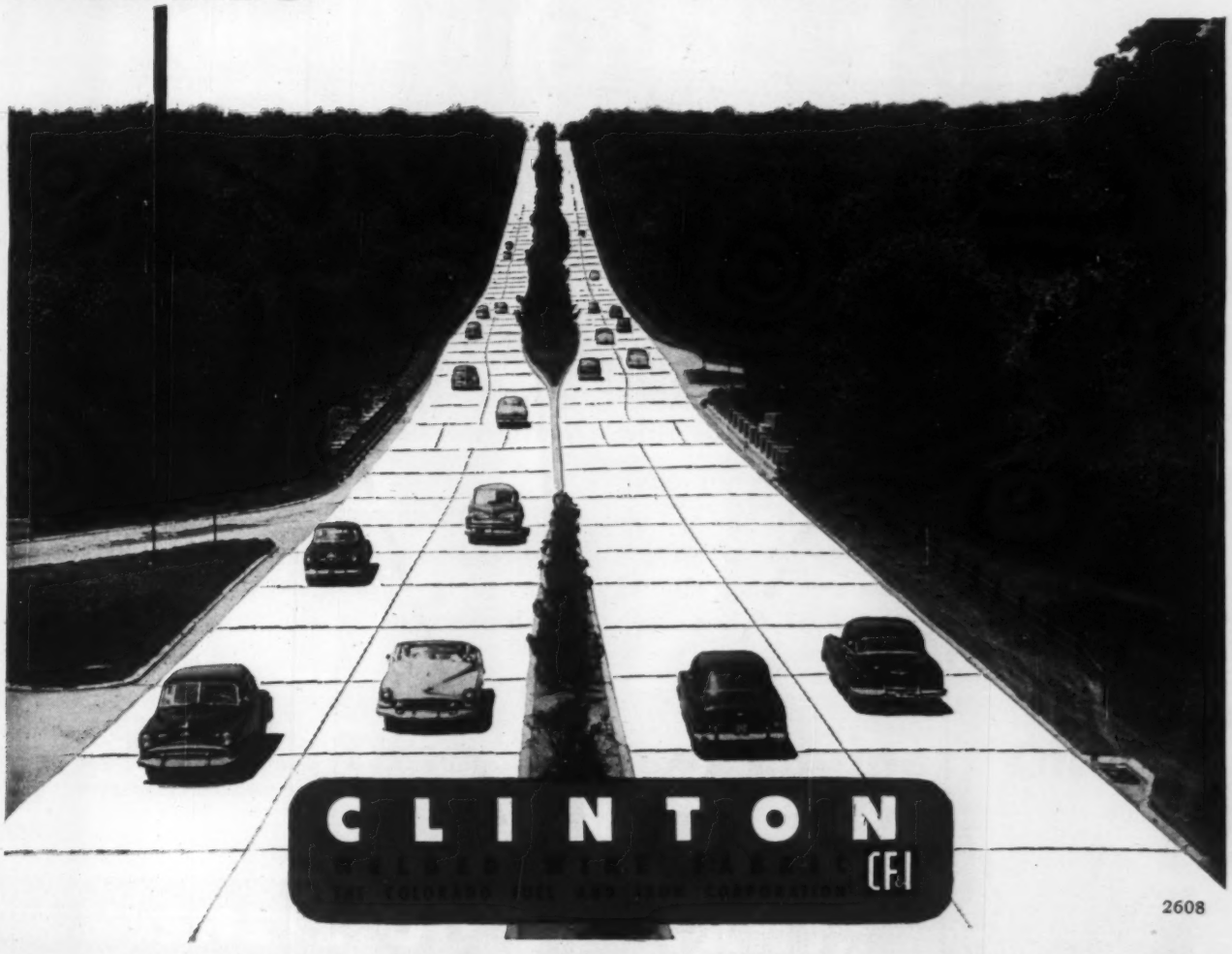
Embedded in the concrete pavement, Clinton Welded Wire Fabric is the steel reinforcement that literally holds the highway together. The heavy, welded wires give positive mechanical anchorage of the concrete which means better load distribution and controls cracking.

Clinton Welded Wire Fabric is available in a wide variety of gauges and spacings for all reinforcing requirements. It meets all A.S.T.M. and A.A.S.H.O. specifications.



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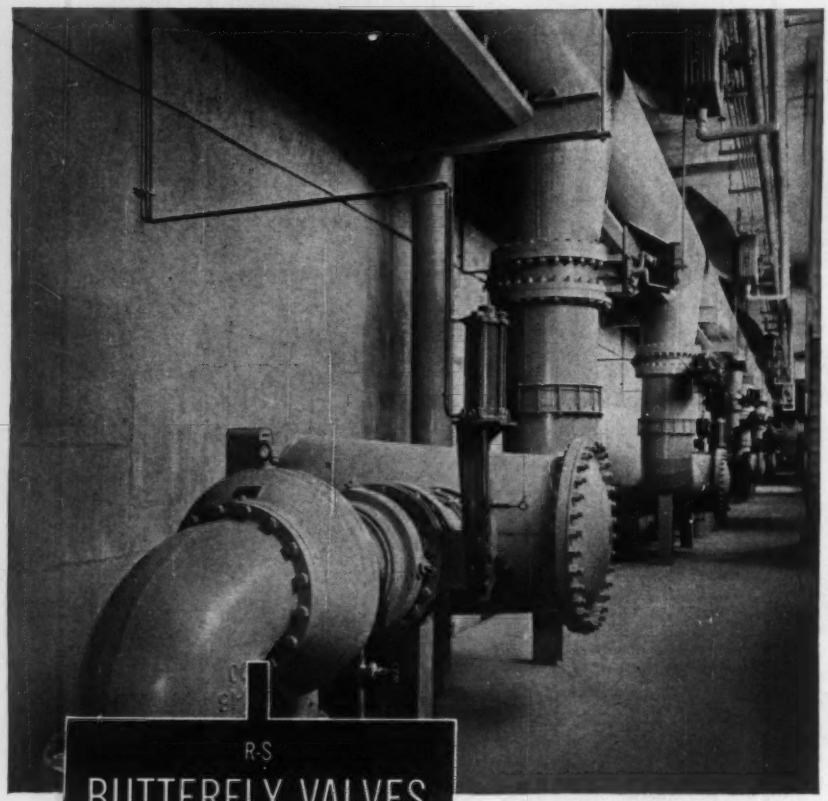

San Jacinto Project uses 65 large R-S Butterfly valves

CITY OF HOUSTON SAVES $124,000 WITH DROP-TIGHT RUBBER-SEATED VALVES

Choosing R-S Rubber-Seated Butterfly Valves enabled Freese, Nichols & Turner, Consultants on the San Jacinto River project, to save $124,000 for the City of Houston. Use of 65 of these valves for all low-pressure service gave a substantial space reduction and the direct, in-place cash savings over gate valves. SMS cone check valves were also chosen for pump discharge service.

Positive closure in R-S Rubber-Seated Valves is obtained by wedge-type closure of the disk within a one-piece rubber seat. Tough, flexible rubber seals the entire disk seat—including the area around the shaft bosses. Supervised testing of a six inch R-S Rubber-Seated Valve proved that after 6,000 closings the valve was still giving positive shutoff at 100 psig water.

These valves are the product of over 75 years of design and engineering experience in the hydraulics field. To find out more about our complete line—R-S Butterfly, Rotovalves and Ball Valves—write to S. Morgan Smith Company, York, Pennsylvania.

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News Briefs . . .

Harbor Freeway Bids

The California Division of Highways has called for bids on one of this year's biggest roadbuilding jobs in the state. It involves construction of an eight-lane section of the Los Angeles Harbor Freeway between 92nd St. and Gage Ave. The project includes one grade separation and 16 undercrossings. Bids will be opened June 16 in the division's Los Angeles office. (For story of the freeway's progress see ENR March 31, p. 34.)

Hotels for State Parks

The Texas legislature has passed a bill authorizing the State Park Board to issue up to $25 million of bonds to finance construction of lodges in state parks. As a test of the plan's feasibility, three resort hotels costing $5 million will be built at Inks Lake Park in central Texas, Eisenhower Park on Lake Texoma, and Atlanta State Park at Lake Texarkana.

New AGC Chapter

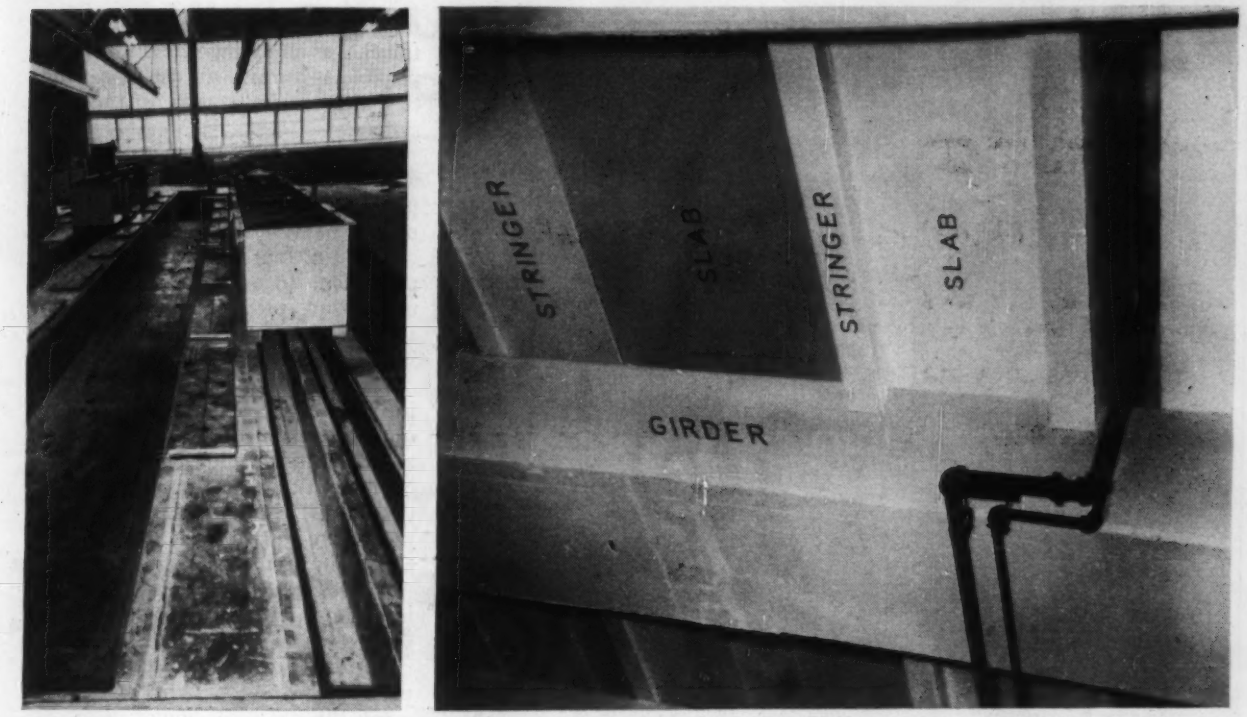
The Arizona Building Contractors has been chartered as the 124th chapter of Associated General Contractors of America. The new chapter's membership is made up of 33 firms engaged principally in building construction throughout Arizona. Until now, AGC's 21-year-old Arizona chapter has represented all general contractors in the state. The Arizona chapter now will represent principally highway and heavy constructors, and the ABC will service builders.

Water Districts Law

Legislation authorizing establishment of metropolitan water districts has been signed by Gov. Ed. C. Johnson of Colorado. Primary purpose of the law is to permit the counties surrounding Denver to form water districts and negotiate for their own water supplies. The districts will have the power of eminent domain and can finance water development with voter-approved bond issues.

Mercury Vapor Lamps

Within the next six months Connecticut will offer a new boon to drivers—mercury vapor lamps on an eight-mile section of highway between Meriden and Wethersfield. The 384 lights, about 200 ft apart, will provide 20,000 lumens. They will be controlled by photoelectric cells.



TRENCHES CAST IN FLOOR SLAB look good from above or below—they also do better job than conventional ground slabs.

Unique Waste System Built Into Plant

Second floor of new IBM building incorporates a system of trenches and conduits for waste liquids and foul air

That our industries continue their progressive assault on housekeeping has been demonstrated frequently in recent years. But seldom are so many departures from conventional design and processing incorporated into one production building as can be found in a substantially completed 139,000-sq-ft plant under construction at Endicott, N. Y., by International Business Machines Corp.

The new two-story, reinforced-concrete-frame building will be devoted to heat treating, plating and plastic molding operations when it is put into full operation—several plating and heat treating processes are going on now.

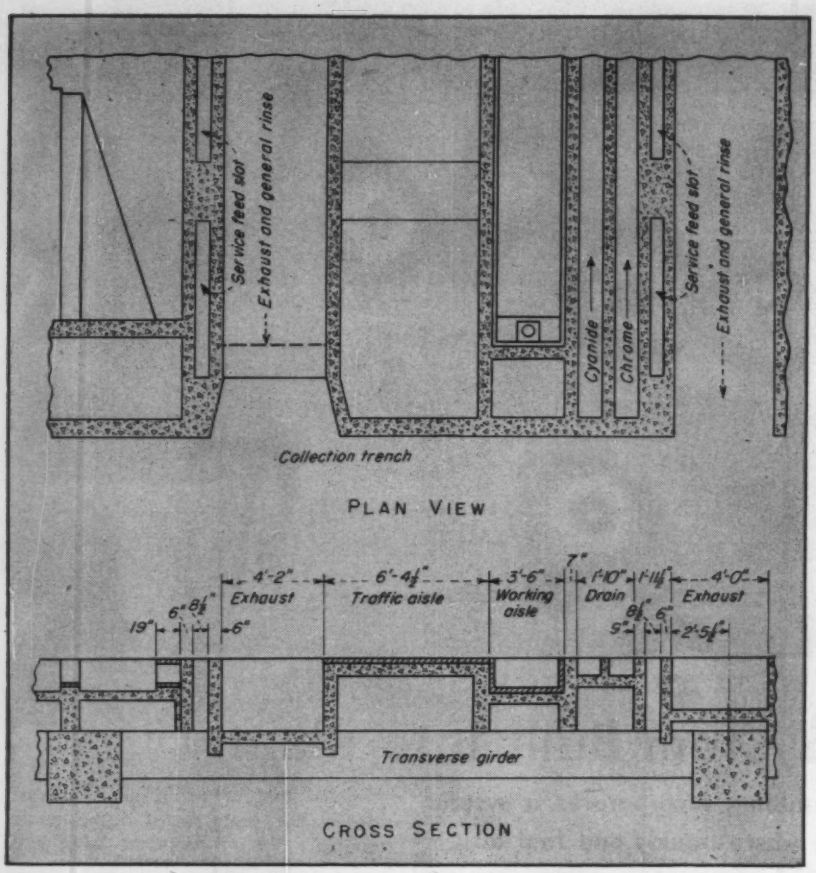
In the interest of economical and efficient operation, designers of the new building reversed the usual procedure of placing furnaces, plating tanks and molding machines on ground floors. Instead, IBM's architect, Amedeo Leone, in consultation with Smith, Hinchman and Grylls, Inc. (both of Detroit, Mich.), concentrated these operations on a second floor, leaving the ground floor areas free for accommodation of generators, storage tanks, filters, waste disposal operations and other auxiliary services.

• **Trenches built in**—But this arrangement created a problem with respect to transmission of large quantities of waste materials from plating and treating processes to the disposal facilities. If transmission channels were placed upon a conventional floor system, aisles for operating personnel would be at different levels, so it was decided to integrate a trench system in the reinforced concrete slab construction of the second floor.

Thus, a system of main and transverse girders was laid out to support stringers, which would act in most cases as the sidewalls of liquid waste trenches. Trench bottoms were cast between—and supported by—stringers that were installed at varying on-center distances according to widths necessary for transmission of the different waste volumes. A main collection trench was installed at right angles to the pick-up system for conveyance of waste by gravity to manholes leading to treatment facilities on the floor below.

Leak- and acid-proofing was accomplished through application of poly-

COLLECTION CONDUIT is the double-action plenum that collects wastes from trenches, conducting them to grate-protected outlets, while it picks up fume- and odor-laden air and transports it to the square exhaust ports (right) for air-wash.



REINFORCED CONCRETE FLOOR SYSTEM was designed to provide individual channels for each type of waste. Slabs are suspended between stringers at varying depths allowing variation of flows, yet assuring level work areas.

vinyl chloride plastic sheeting on the inside of the trenches. Cyanide and chrome wastes are individually separated from general rinse wastes to enable separate treatment of each.

Fumes and odors, usually associated with plating and heat treating processes, presented another problem for the designers, and they solved it by assigning a dual role to the general rinse transmission system. By using trenches as air exhaust conduits, it was possible to furnish air cleaning facilities with little alteration to the rinse system.

A "push-pull" blower arrangement was devised with a fresh-air manifold pipe under pressure supplied by a pusher blower, and a slight vacuum created in the trench system by a puller fan. In order to maintain vacuum, thus providing 200 fpm air velocity, trench covers were sealed with mastic and neoprene strips. The only other alteration necessary was the installation of 3-ft 6-in. square exhaust ports in the floor of the main collection trench allowing transmission of fume-laden air to fume wash facilities below. Leak-proof sides of the ports were carried eight inches above the main trench floor to eliminate possibility of liquid wastes seeping into the air-wash chamber from the main collector.

Perforated pipe connected to the pressure manifold blows clean air across the surface of liquids in process tanks, thus picking up a saturation load of fumes and impurities along the way. Plastic collection hoods on the opposite sides of tanks complete the circuit of air movement by drawing fume-laden air down into the trenches thence down to the fume-wash chamber. Washed air is discharged to atmosphere cleaner than when it was drawn in.

• **Triple attack on wastes**—Since the Susquehanna River—receiving body for IBM wastes—is a class "A" stream, extensive treatment had to be planned for highly pollutant wastes of the new building. Each waste product—

AIR COLLECTOR for plating tanks is a perforated pressure feed line pushing clean air across the tank to be picked up by plastic intake hood that leads foul air down into exhaust-general rinse system, thence to fume wash unit.

VACUUM IS MAINTAINED in transmission trenches by means of covers set in mastic and sealed at joints with neoprene gaskets. Covers allow innovation of "push-pull" method of transmitting unclean air down into fume wash chamber.

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Your Bruning Man Can Help You Solve Them With Hamilton Auto-Shift Tables

Let your Bruning Man show you how the unique design of Hamilton Auto-Shift Tables not only can help you solve present problems but also allow for orderly, integrated expansion.

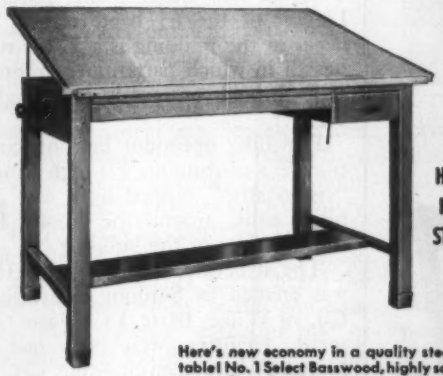
How Auto-Shift increases space and operating efficiency

Auto-Shift combines a board and reference desk in one unit to make more effective use of space. When used in row installation, as pictured at the left, Auto-Shift puts a large reference surface and drawer directly behind each draftsman for even greater space and operating efficiency. To check reference material, the draftsman need only turn in his chair and slide the reference surface toward him. Over conventional desk-next-to-board arrangements, this Auto-Shift feature saves time and floor space.

How Auto-Shift reduces draftsman fatigue

Auto-Shift provides convenient foot and hand releases for instant, effortless one-man adjustment of height and slope. Counterbalanced top allows finger-tip control of slope. Draftsman can change position often and yet reach any part of the board without strain whether seated or standing. He works faster and easier; production rate goes up!

See for yourself how the advantages of Auto-Shift can increase space and operating efficiency in your drafting room. Mail the coupon below for detailed information.



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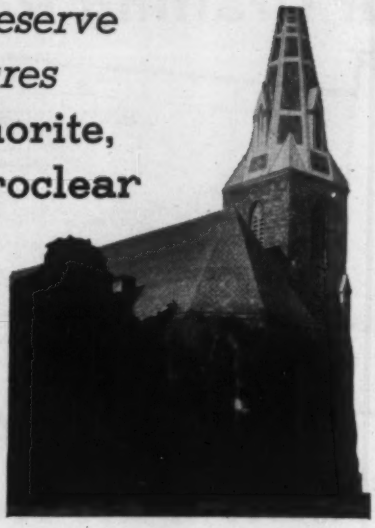
How to restore and preserve costly masonry structures with **D-J Mortar, Thorite, Thoroseal and Thoroclear** *even though masonry looks beyond repair!*



Second Episcopal Church of Boston, Brookline, Mass.

Only the bare skeleton of cornice remains after years of disintegration.

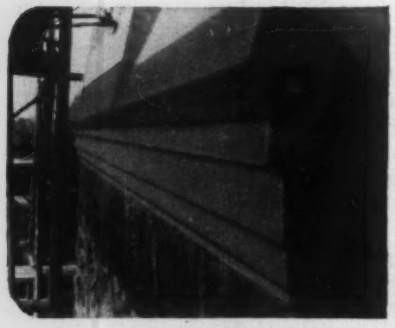
To repair, all loose material was cut out and complete surface was wire brushed in preparation of THORITE treatment.

Above photos show how vines grew over stone structure and hid most of damaged masonry.

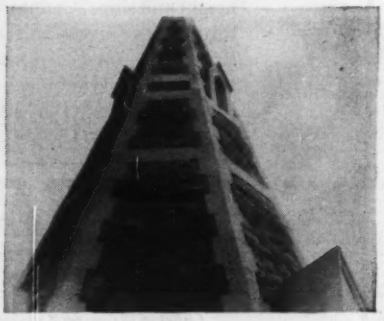
Vines were cut away from building and disintegrated joints grouted with D-J Grouting Mortar.

Stone trim was then given two coats of THOROSEAL. Entire surface received a coat of transparent THOROCLEAR.

ALL MASONRY NEEDS PROTECTION



AFTER Brush and trowel coat of THORITE, nonshrink patching mortar was used to restore this masonry to its original lines. A two-coat application of THOROSEAL was applied to beautify and protect the surface. Nonsagging THORITE can be used to model any masonry structure back to its original lines.



Stretcher stone work treated with D-J Grouting Mortar and entire stone surface THOROCLEARED.

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"HOW TO DO IT"

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chrome, cyanide and general rinse—must be treated separately.

General rinse liquid waste, composed of all waste water with the exception of those containing chrome and cyanide, flows by gravity through the transmission system until it drops through collection trench manholes into the treatment area. The rinse is then pumped from a 2,700-gallon surge tank through a series of three diatomite filters and ultimately is received in one of two banks of ion exchangers. The anion and cation tanks of each bank hold a total of more than 10,000 gallons with each bank acting as a unit.

A 47,500-gal reservoir for demineralized general rinse water—recovered as a byproduct—has been installed below the first floor level.

Cyanide wastes, led separately to the treatment room, are treated in an 18,700-gal settlement tank, with effluent chlorinated before discharge into the receiving body. Below the first floor is a 42,500-gal cyanide surge clearwell.

Chrome wastes are treated in a closed system that not only reclaims chromates, but recovers caustics as well. Chromate is demineralized in two banks of small ion exchangers, and effluent is neutralized in a 37,700-gal tank. Chromate recovery is so high that recirculation of residual chromate waste doesn't affect recovery process.

Caustic recovered from the chrome waste treatment is stored for re-use in two 5,700-gal storage tanks. An emergency chrome clearwell—capacity 16,500 gallons—is located below the main-floor waster treatment room also.

This new addition to the IBM main plant will under normal operation handle more than 40,000 different parts used in the company's electric accounting machines, electronic "brains" and time recording machines.

An automatic conveyor, with 50 carriers—each with a 2,000-pound capacity—will transport heavy loads of manufactured parts between the new structure and other plant buildings. Largest of the 65 heat treating furnaces in the building is a 114-ft roller hearth in which parts move automatically through temperatures as high as 2,100 F.

Providing optimum lighting conditions is a continuous 4-ft-high window "vision strip" topped by a 6-ft glass block panel around the second floor on four sides of the building.

The structure, designed by SH&G, was erected by Sordoni Construction Co., of Wilkes Barre, Pa. Waste treatment facilities were designed by Graver Water Conditioning Co. and installed by Mance Corporation of New York City.

"Conservancy" Takes a New Look at Its River

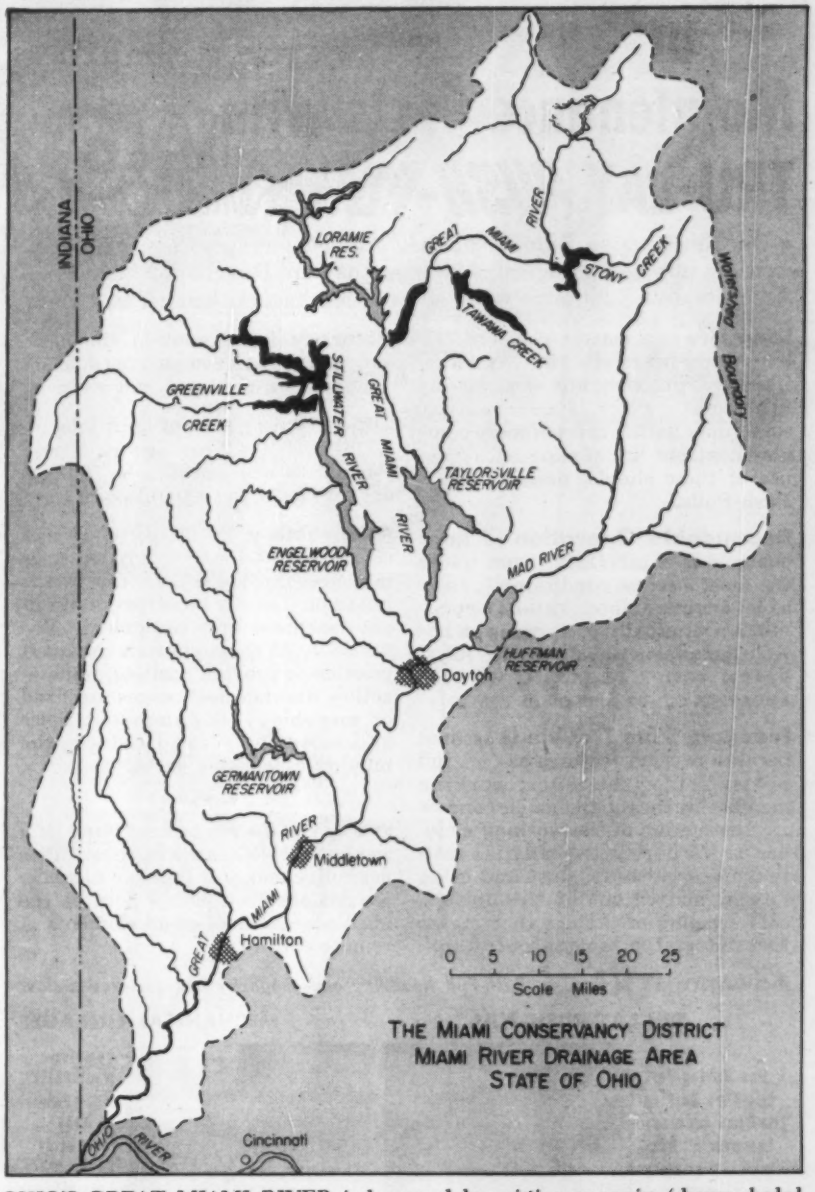
In 1922, in the Ohio's Miami River Valley, the Miami Conservancy District completed what was then "the largest project of its kind ever undertaken", a $30 million, five-dam flood prevention development. Today, with flood control long since bought and paid for, local interests making up the Conservancy District are studying the plus side of the picture—possibilities of increased river use.

To the existing, single-purpose flood dams would be added a possible three new storage reservoirs with combined capacity near 200,000 acre-ft.

Water conservation has been added to flood water control as a new purpose of the Miami Conservancy District. Water of the Miami and Stillwater Rivers will be stored for three equally vital purposes: low-flow control to relieve pollution conditions; industrial water supply; and groundwater recharge for industrial and domestic uses.

Population and industry in the Miami Valley have "caught up" with the size of the river. Therefore, continued growth along its bank will depend largely on increased flow in the stream.

To explore MCD's new interest in the river, a Water Conservation Subdistrict was sought in 1953. By 1954 the conservation subdistrict was established when a fund of $200,000 was deposited by interested parties for engineering and legal studies. Work began on the preparation of a plan and appraisal of benefits.



OHIO'S GREAT MIAMI RIVER is harnessed by existing reservoirs (shown shaded above). At least three new ones, from among those shown in black, will be added. Groundwater will be recharged from river near Dayton, Middletown and Hamilton.

• **Business boosters**—Impetus for the present effort toward water conservation came from the Dayton Chamber of Commerce. In June, 1952, it established a water conservation committee with O. B. Reemelin, vice-president of Dayton Power and Light Company, as its chairman. There were 25 representatives of key industries on the committee—largely engineers and others directly concerned with the water problem.

This group originated a plan for upstream storage and then expanded into a Miami Valley Conservation Committee including representatives from all along the river valley—from chambers of commerce, civic groups, municipalities, business and industry.

In June, 1953, the nine Common Pleas judges who make up the Miami Conservancy District Court heard the case for long-range water conservation plans. Expert witnesses told of the need for low-flow regulation; low flows at present are insufficient for the industrial needs as well as for self-purification by the stream of its pollution. Also, groundwater levels in the valley have been lowered by pumping and could be raised by recharge from the river.

The court agreed on need for conservation; the way was cleared for the subdistrict. And upon deposit of the $200,000 with MCD the subdistrict was created. The fund is to underwrite preparation of an official plan, to study benefits and costs. If the Conservancy later approves the developed plan and appraisals, bond financing will be arranged and the $200,000 fund will be returned to the contributors.

The official plan, when drawn, will detail dams, reservoirs, and groundwater recharging methods. Exactly what is to be done depends on findings of engineering surveys now under way. Any cost estimate must await these surveys, but something on the order of $10 million or more will be involved.

• **Financing**—At this price, financial justification is simple: annual rate of repayment including 3% interest would be about $666,000 annually for 25 years. This annual amount is compared (for purpose of justifying the project) with the added tax income that could be brought into the area by new industries totaling $26 million in assessed valuation—indus-

There is No Worry about Failures or Maintenance Costs with TRU-LAY *PUSH-PULL* Remote Controls

• On Construction Equipment they are being adopted by an ever-increasing number of engineers because they are Rugged, Trouble-Free, Accurate and Adaptable to all sorts of mechanical situations.

Long Life is a matter of record. We have never heard of a TRU-LAY *Flexible* PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action Push-Pulls.

Dependable Operation of these controls is a certainty, even under the most adverse conditions . . . HOT as jet engines (Note: TRU-LAY PUSH-PULLS are actually performing on hot jet applications) . . . COLD to 70° F. below zero . . . SOAKIN' WET . . . ABRASIVE . . . or just plain TOUGH.

Freedom from Trouble is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

Accuracy is inherent in the basic design of TRU-LAY PUSH-PULLS. They are precision products, not gadgets.

Capacity ranges from light jobs up to jobs of 1,000 lbs. input. These Push-Pulls will handle jobs 150 feet or more from the control point.

Adaptability to all sorts of mechanical situations explains, in large measure, the use of TRU-LAY PUSH-PULLS on literally hundreds of different machines and equipment. The *flexibility* of these controls makes it possible to provide positive, remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration . . . and reduces the number of working parts.

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TRU-LAY PUSH-PULLS are "Solid as a rod but *Flexible* as a wire rope." This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all elements of remote controls.

***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

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Simple
One Moving Part
Life-Time Service
Life-Time Accuracy
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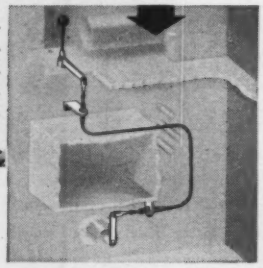
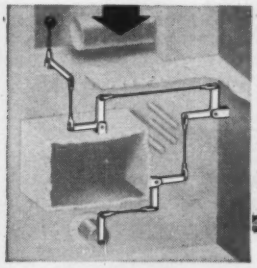


MECHANICAL LINKAGES



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tries that might be attracted to an improved river.

The exact requirements of low-flow regulation will not be known until studies under way are completed. But a tentative figure, if only for the sake of discussion, has been set at 800 cfs at Hamilton, Ohio, at critical summer temperature. Flow now drops to below one-third of that rate.

Storage of 200,000 acre-ft in new retention reservoirs could assure at least this improved flow with no adverse effect on existing flood control features of MCD. New reservoirs would be far up into the headwaters in order to give benefit to as great a length of the rivers as possible.

Groundwater recharge is now expected to be a river "operating" method rather than a construction feature of the plan. Water from water-table recharge will not be stored and spread (as in California, for instance). More likely, the plan will be to work on the bottom seal of the river, break the impervious sediment layer that keeps river water from seeping down into the ground. A stretch of river bed would be worked over by 8 or 10 in. suction dredges, which would lift silt into the current and lay bare a gravelly bottom more receptive to percolation. Dredge operations at times of relatively high water could condition enough acreage of river bottom to feed the aquifer what it needed.

Barton M. Jones is chief engineer and general manager of the Water Conservation Subdistrict, also of the Miami Conservancy District. He heads up general engineering features of the study which are being handled by the Conservancy's own organization. His engineering staff includes C. C. Chambers, formerly a consulting engineer of Columbus, and Max L. Mitchell, recently principal engineer, Indiana Flood Control and Water Resources Commission.

Stream pollution aspects on the Miami and Stillwater Rivers are being surveyed and studied under contract with Prof. C. J. Velz, chairman of the department of public health statistics, University of Michigan. John E. Kinney, consulting engineer of Ann Arbor, is collaborating in this survey. Also vital to the survey have been industries and municipalities of the valley which have most generously contributed time and laboratory facilities.

This contribution by industries in the valley has been hailed as a very significant factor in the completion of work done to date by those concerned with the project. A great number of industries on the river have people experienced in water sampling and testing techniques. These are also the industries interested in proposed improvement of the river.

Before you plan your sewer system it will pay you to consider carefully all the advantages listed on this page. They are typical of those that Transite® Sewer Pipe has provided. Among them are real money-saving advantages important to all concerned with sewer systems . . . the contractor, the engineer, the taxpayer. And among them, in all likelihood, are many that Transite Pipe can put into effect *under your own sewer system conditions.*

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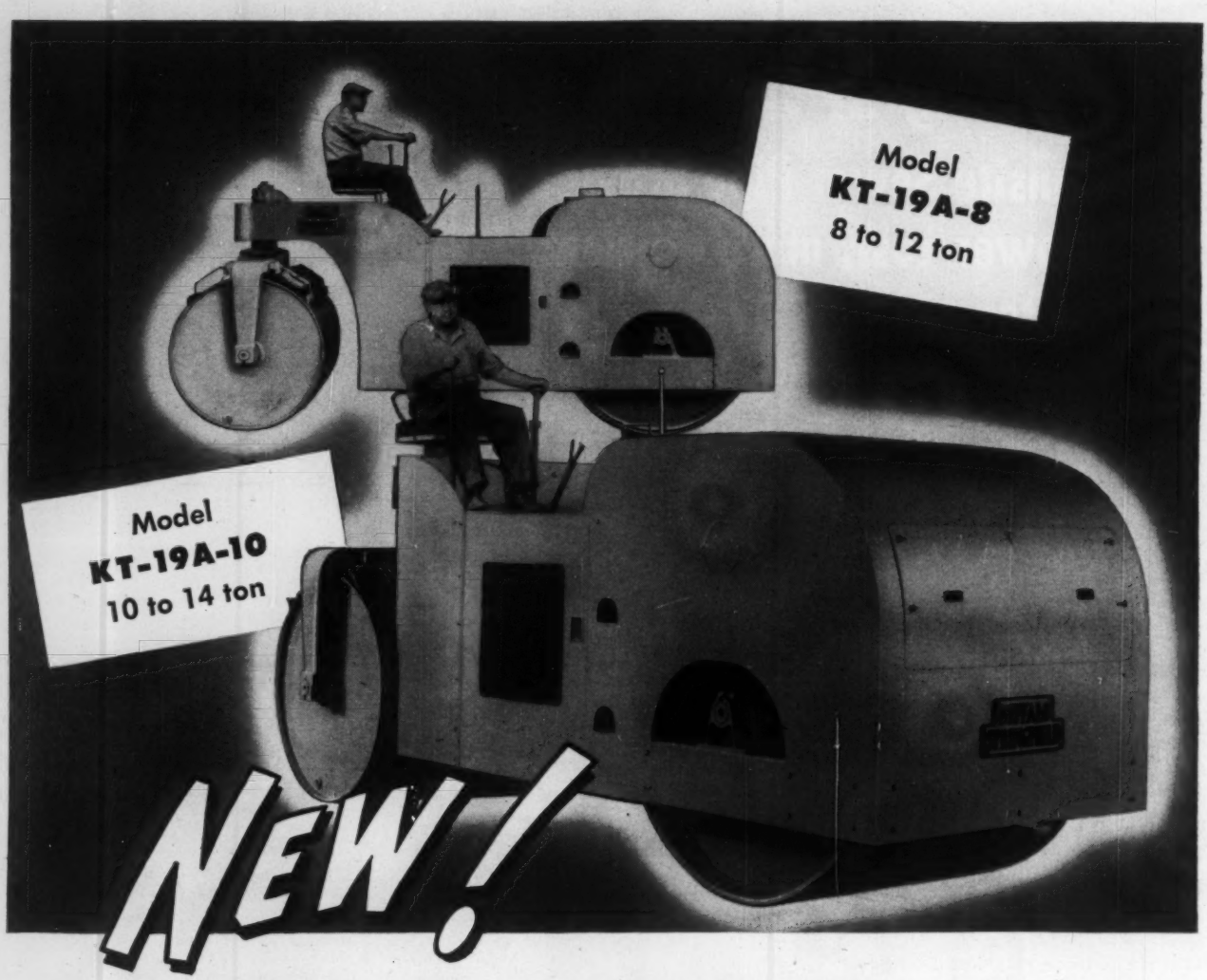

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The heavy-duty, industrial-type engine (diesel or gasoline optional) delivers dependable power under all kinds of operating conditions. Buffalo-Springfield's widely-known bevel gear and final drive assembly offers the advantages of unusually low gear tooth bearing pressures, results in less wear, and is easy to adjust when required.

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THE LEADER IN COMPACTION EQUIPMENT DESIGN AND MANUFACTURE

FOR RESURFACING section of Pennsylvania Turnpike, wire mesh was placed on cleaned concrete surface. Aggregate scattered along mesh gave traction to paver's tracks.

Failure of Penn Turnpike Resurfacing: A Lesson in Use of Wire in Asphalt

Resurfacing of 4½ miles of the Pennsylvania Turnpike last year with a 3-in. layer of hot-mix bituminous concrete placed on top of wire mesh failed to bond with the concrete slab. After a short period of pounding by heavy traffic the resurfacing developed numerous potholes and a great many cracks, a condition that made it necessary to remove and replace the whole 4½ miles of asphaltic concrete.

Principal trouble with the bond of the bituminous concrete and the old concrete highway surface seemed to be that the binder used was a coarse mix.

Due to the coarse mix, the wire mesh, placed flat on the old roadway, remained practically in contact with the original surface and in only a few instances did it work up into the bituminous concrete more than ½-in. Normally, where mesh has been used, expansion and contraction of the mesh as the asphalt is placed and then the action of rolling have caused the mesh to rise more than this.

According to the Wire Reinforcement Institute, steel reinforcement generally tends to rise in the binder course about three quarters of an inch to an inch from the existing pavement being resurfaced, and it is in this position that it apparently best performs its functions of controlling and minimizing reflection cracks and preventing "shoving" of the surface. Available records from successful jobs indicate that the maximum size stone in the bituminous mix should be ¾ in., whereas the graded mix on the Pennsylvania job had aggregates up to 1½ in. in size (although there was less than 5% of this material).

• **First turnpike resurfacing**—The story of the job begins back in July of 1954 when a contract for resurfacing 22 miles of the original Pennsylvania Turnpike was let to the Latrobe Construction Co., Latrobe, Pa. (ENR July 29, 1954, p. 24). The pavement, placed in 1940, is in a mountainous section near Somerset, Pa., between the Laurel Hill Tunnel and the Allegheny Tunnel. With lanes 24 ft wide, the concrete has a uniform thickness of 9 in. and is reinforced with wire mesh set 2 in. below the surface.

Designed for traffic loads of the 1940's, the original highway construction did not include a prepared subgrade or the improved drainage specified today. Nevertheless, despite the exceptionally heavy volume of traffic over the years plus unanticipated overloading during the war period, only recently has resurfacing become necessary on this portion of the 160-mile highway.

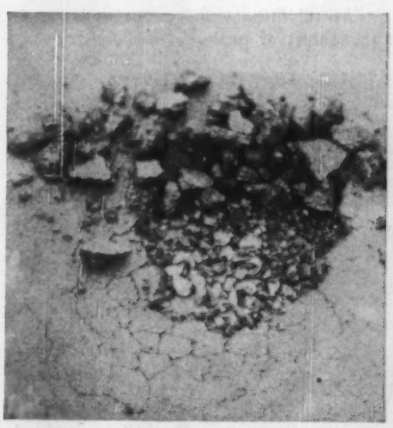
Specifications for the resurfacing job called for a 2-in. binder course of bituminous concrete topped off with a 1-in. wearing surface. With a 4.5% asphalt content the binder course had 25% of fine material (−8) in the coarse aggregate. The large aggregate was in this binder course.

For the start of the work, welded wire mesh was laid on the thoroughly cleaned concrete roadway, but was not fastened to the roadway. The mesh used was No. 10 gage with 3x6-in. openings, placed in sheets 7x11½ ft in size. Sheets were overlapped 3 in. lengthwise on the pavement and tied together with hog rings. Transversely, they were so placed that there was no mesh over a 6 in. width along the centerline and over a 3-in. strip along each edge of the pavement.

No tack coat was specified or used between the old concrete and the binder course.

• **Early difficulties**—In applying the binder course, difficulty was at first encountered in keeping the mesh smooth on the old pavement. That condition was corrected by placing four steel rails directly under the feeding pan of the paver and placing two spring plates on either side of the paver. The rails and plates ran along the wire mesh keeping it flat (ENR Oct. 21, 1954, p. 39).

It was further found that the crawler tracks on the paver could not get adequate traction riding along the wire mesh. The tracks simply skidded



POTHOLES formed in the resurfacing soon after traffic was allowed on it. The aggregate had been stripped of asphalt after water had worked under the resurfacing.

CLEANED OUT POTHOLE shows how the mesh had remained in contact with the old pavement surface and had not risen up into the resurfacing.

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IN TRENCHES — CLOSE TO FOOTINGS, ETC.

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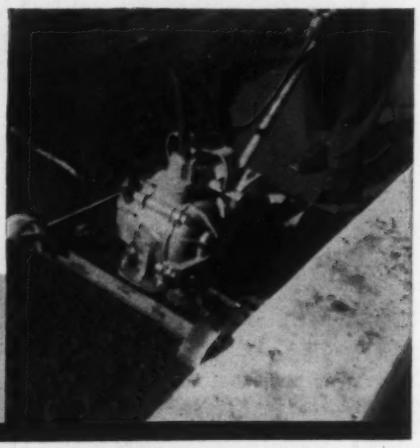

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and pushed the wire mesh around on the pavement. This condition was corrected by placing small trails of loose bituminous concrete in front of the tracks to provide traction as the paver moved forward. The wire mesh still moved to some extent.

Another cause of lack of bond and prevention of the mesh working up into the resurfacing may lie in the fact that the large aggregate binder obtained only 60% compaction under the tamping bar of the paver, while the asphalt was still hot. This condition may have prevented the initial expansion of the mesh under the hot mix, an action usually counted on to aid in working the mesh up into the binder course.

The final result was that the mesh actually formed a separation between the old pavement and the resurfacing.

Where the sheets of mesh overlapped, the action of paving and rolling caused the material to crack due to the independent movements of the two mesh sheets. The result was that cracks appeared in the binder material almost without exception every 7 feet on the 12-ft lane. In some instances the cracks appeared before traffic was permitted on the resurfacing, and in many the cracks appeared immediately after rolling the surface.

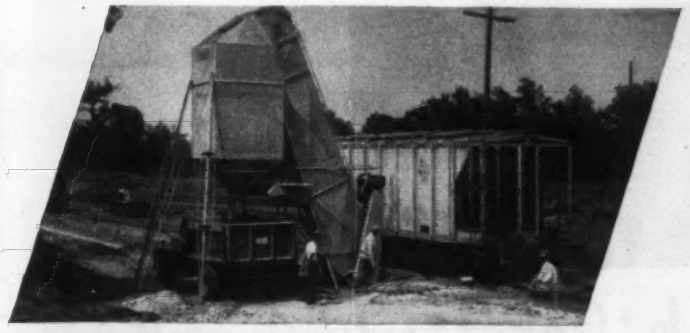
A mesh of 6x6-in. openings was tried with little or no improvement.

• **Signs of distress appear**—About three days after the surface had been placed traffic was allowed on the roadway, and signs of distress began to appear in the surface almost immediately. Cracks over the 3-in. overlaps of mesh were more pronounced in the outside lane of the pavement where heavy truck volume was greatest.

In the act of breaking down, the resurfacing would develop potholes about one or two feet from the edges of the pavement after the initial cracks appeared over the mesh overlaps. These potholes enlarged rapidly under the action of traffic, and portions of the resurfacing began to slide freely, although minutely, with the mesh acting like a sled on the old old concrete roadway.

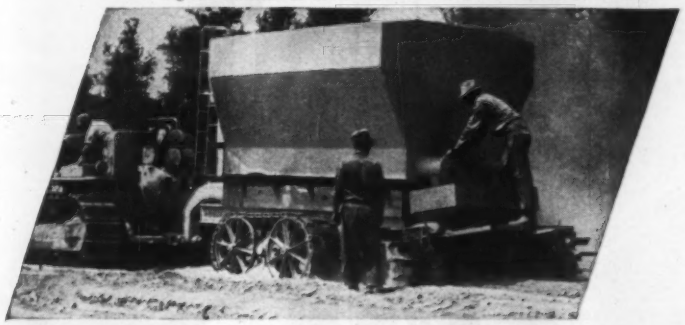
Later small pockets between the old surface and the resurfacing became full of water from rain, capillary moisture or condensation. When heavy traffic passed over the area, a churning action stripped the aggregate of asphalt losing whatever binding qualities it had from this source.

As a result of these developments, the Pennsylvania Turnpike Commission removed the 4½ mile section of resurfacing and replaced it with the conventional 3 in. of hot asphaltic concrete last year.



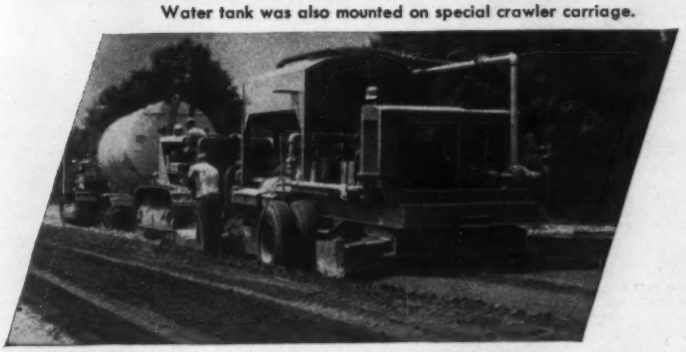
Bulk cement is unloaded mechanically into hopper at rail siding.

Weighed batches of cement in trucks are transferred to tanker.



Crawler treads on the cement tanker carry it through soft sand.

Water tank was also mounted on special crawler carriage.



Mixing train lays a course of soil-cement base 11 ft. wide.

Soil-Cement

solves difficult paving problem and saves $50,000

Wisconsin highway engineers decided something had to be done about an old section of Highway 54. Spring break-up closed it for long periods every year and maintaining it had become a serious drain on highway funds. Extensive study showed that a new road would be the most practical solution.

The new 21.5 mile route—4.5 miles shorter—was cut through sand hills and swamps and paved with soil-cement.* Soil-cement pavement was selected because its rigid base can carry normal loads even on soft subgrade in spring thaws and because suitable material needed for other pavements was not available nearby.

Eliminating the expense of hauling material long distances saved $50,000 alone.

Photos at the left show the simple but ingenious methods and equipment used to facilitate operations in the sandy soil. Despite difficult conditions, paving proceeded at a rate of 3000 lin. ft. per day for the 6-in. thick, 22-ft. wide soil-cement base.

As in Wisconsin, experience in most other states has proved that soil-cement is a logical solution to paving problems for roads not subjected to heavy traffic. More and more, engineers are specifying this low-cost, all-weather pavement for building new highways, for paving shoulders, for widening traffic lanes and for reconstructing old roads.

Soil-cement roads are economical because (1) about 85% of the material is soil on the site, (2) paving is simple and fast, (3) being stronger than other low-cost pavements, it can be built thinner and (4) maintenance is low.

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*Soil-cement pavement consists of soil-cement base and bituminous surface.

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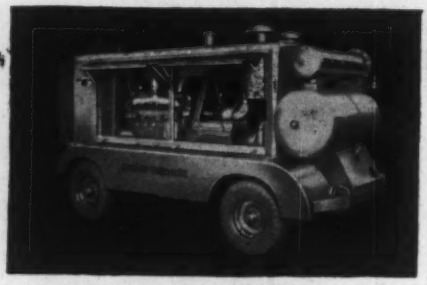

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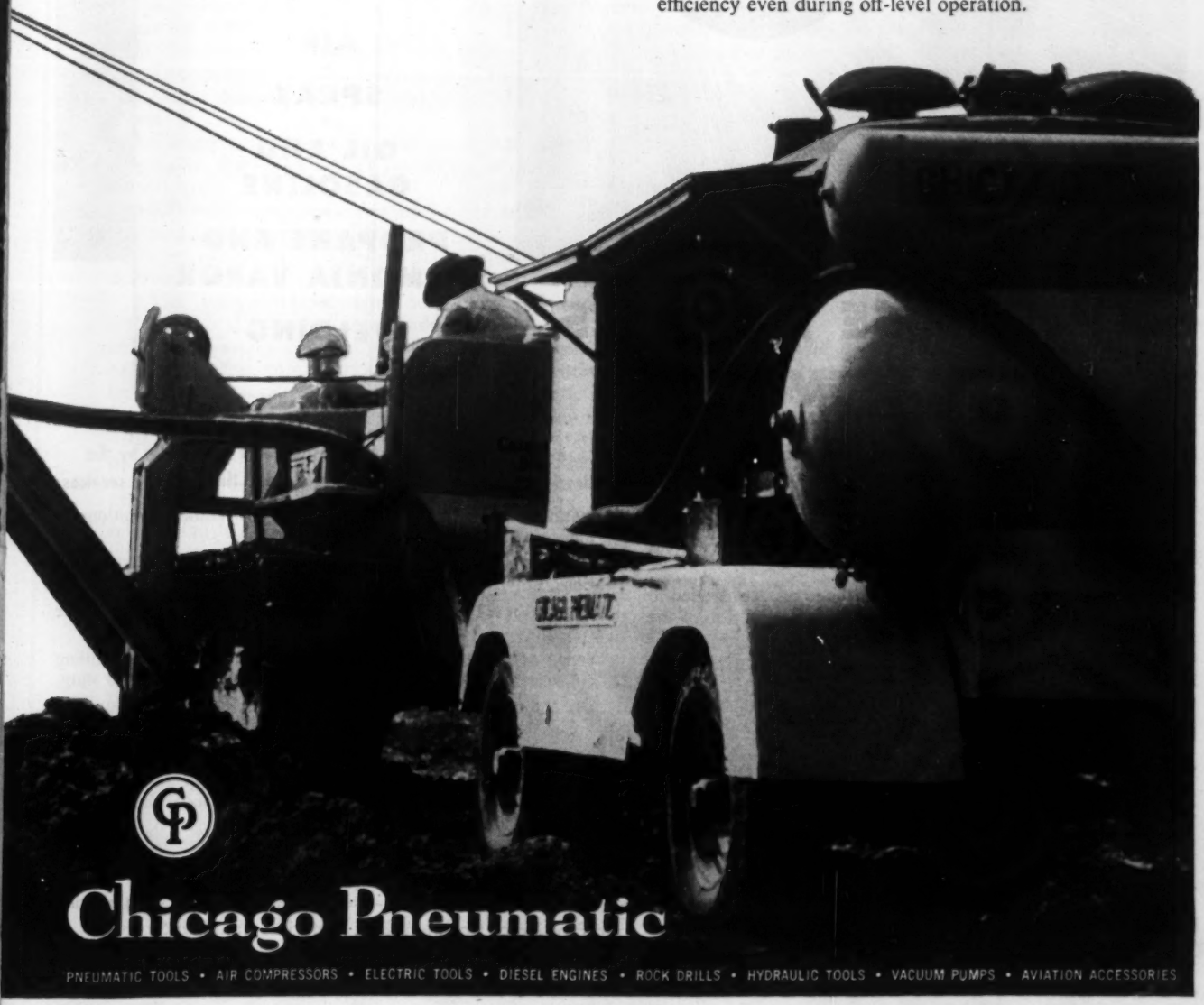

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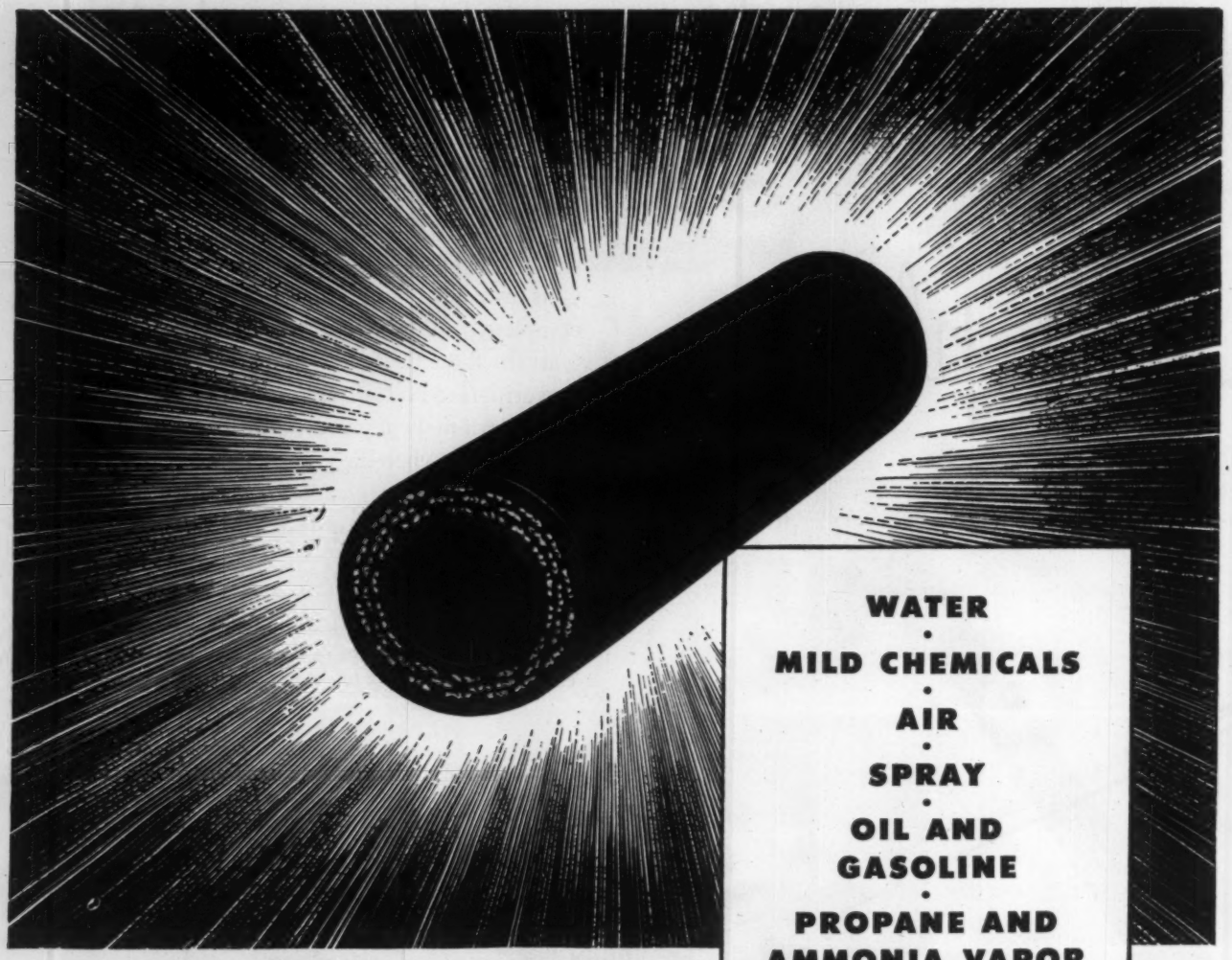

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Needed: Air Pollution Ordinance Modification

Existing ordinances apply to industrial fuels and don't fit incinerator practice—Tests need to set limits

Henry W. Taylor
Consulting Engineer
Freeport, N. Y.

Existing air pollution ordinances need intelligent review and commonsense modification for incinerator practice. They have been based principally on factors related to industrial fuel consumption and therefore do not apply as they should to municipal incinerators.

Air pollution regulations commonly use a CO_2 and excess air background for standardizing field results obtained in fly ash determinations. Since incinerator installations have the sole purpose of destroying a miscellaneous fuel—as against the industrial burning of a fuel purchased under specifications—the basic factors involved in incinerator practice are radically different from those in the industrial field.

In the burning of industrial fuels:

- The purpose of combustion is to produce economically heat and/or power.
- Consequently the CO_2 and excess air in flue gases are of primary importance.
- Efficiency required warrants a different type of personnel than generally employed in incinerator practice.
- The recognized standard bulletin for the determination of industrial air pollution contains some 45 pages and the computations for a typical flue gas determination comprise about 30 pages.

In incinerator practice, on the other hand:

- Purpose is to dispose of a miscellaneous material without primary relation to the heat or power produced.
- CO_2 content is widely variable, means nothing as a basis of comparison and the excess air in the flue gases is dependent purely on effective combustion of an unclassified fuel. Effect of excess air on the heat or power producing efficiency is of secondary importance. Standardizing final results on CO_2 and excess air percentage at once penalizes the incinerator by a factor of from two to four.
- Personnel provided for incinerator operation is of a lower technical grade.
- It is hoped that a standard method of determining air pollution from incinerator operation can include a much simpler process, less computations, and be related to the basic factor of particulate weight per ton of operating rate per hour, or an equivalent thereto.

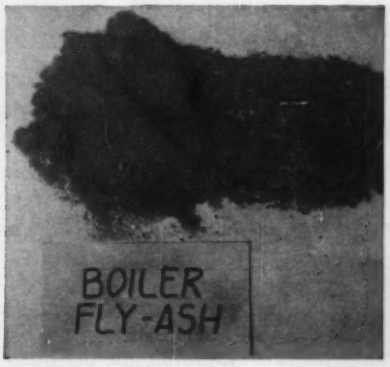
Due to these differences in purpose, in personnel, in operation and in the final information which is of essential interest to public health in incinerator practice, it is considered that existing regulations need adaptations to apply to air pollution by incinerator operation. The need arises from a well deserved consideration being devoted to fly ash in incinerator flue gases, its influence on air pollution, its nuisance potentialities and its effect on public health.

• Type of field tests needed—The first essential in determination of the particulate in the waste gases of an incinerator is that the test extend over a comparatively long period, to include wide variations in temperature and pressure conditions—those which occur during periods of stoking, charging, and cleaning furnaces.

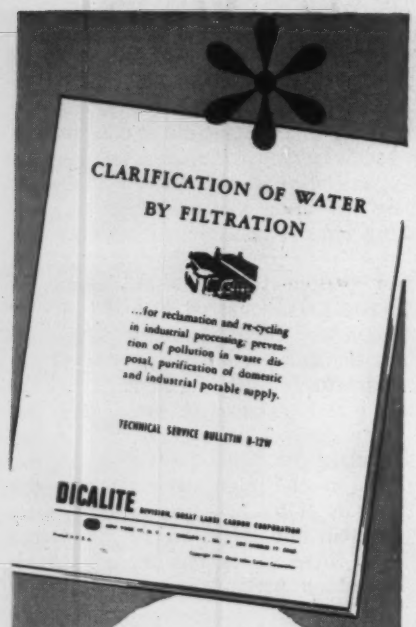
Field determinations necessarily involve a traverse of the flue to determine the mean velocity. Having the mean velocity, the total flow of flue gas is readily computed at a given temperature and pressure. The average of various determinations extending over a considerable period can then be expressed in terms of weight of particulate per total volume of waste gas discharged into the air per hour, and finally into the weight of particulate per operating ton of incinerator capacity per hour. Temperature and pressure are involved in the individual determination of the particulate per cubic foot of waste gas, but in the final determination the factors of temperature, pressure, CO_2 content and excess air are eliminated and there would remain a standard, based on particulate weight per ton per hour.

Sufficient data are not now available to determine a practical standard for incinerators. The majortiy of incinerators have neither waste heat boilers nor any special form of fly ash interception subsequent to fly ash chambers. To establish a general standard beyond the reasonable reach of the majority of incinerators would accomplish no good purpose. On the other hand some established practical standard would put the average incinerator on its guard and in many cases suggest need for additional fly ash collection facilities within financial resources of the particular project.

• Example of what can be done—In modern practice, a great deal can be done to solve the incinerator fly ash problem by either the dry or wet method of fly ash interception. The Hempstead, N. Y., refuse disposal plant (ENR Aug. 21, 1952, p. 44) does it by the dry method. The Hempstead incinerator has waste heat boilers and induced draft; this design made it practicable to install fly ash arrestor apparatus of the dry



WHAT GOES UP THE CHIMNEY?—Intercepted particulate from modern Hempstead, N. Y., plant is typical of material in incinerator flue gases. Labels in photos indicate where the various particulates were collected.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type. Two furnace units of 175-ton-per day capacity are served by one combination combustion chamber which discharges into a waste heat boiler, thence to the fly ash arrestor and through the fans into the atmosphere. The flue gases leave a furnace chamber at about 30 fps, are deflected downward through the first pass of the chamber at 20 fps, are snapped under a vertical baffle wall at 30 fps, meet the gas flow from the twin furnace chamber, pass upward through the waste heat boiler, and so on.

In this system, the interception of fly ash is produced by tangential ejection, confluence of two opposing gas flows, impingement on wall surfaces, baffle walls, bridge walls, eddies and boiler tubes and the final interception takes place in the cyclone fly ash arrestor. During the period of gas flow through the various elements of the system, the fly ash segregates itself into three different types of particulate. The lines of demarcation between these classifications is sharply drawn and there has been little apparent intermixture at different stages of gas flow, as indicated by the accompanying photos.

• **Kinds of fly ash involved**—The particulate intercepted in the combustion chamber is principally a grey or white flake and contains little of a granular character. The material intercepted in the waste heat boilers is of much darker color and distinctly granular in physical characteristic. The particulate intercepted in the fly ash arrestor is a grey flour containing about 60% of micron size. The following tabulation indicates a size determination of intercepted material in the second and third steps of fly ash interception.

Micron Size	From Waste Heat Boiler	From Cyclone Arrester
2-10 micron	2%	15%
10-20 micron	4%	18%
20-30 micron	7%	14%
30-44 micron	8.5%	14.5%
44-micron plus	78.5%	38.5%
	100%	100%

It will be noted that in the case of the waste heat boiler, 21.5% of the ash was of micron size while that intercepted by the fly ash arrestor contained 61.5% of micron size particulate. A screen test of the combustion chamber fly ash would be of no particular value because of its flat and flakey structure. About 30 cu yd of this fly ash is removed per week. Since fly ash from the waste heat boiler and from the fly ash arrestor are handled hydraulically, it would be difficult to determine the dry quantity of this material which is intercepted per week.

• **Proof it can be handled**—Considerable doubt was expressed by many during the design period as to the possibility of handling the last two classifications of fly ash hydraulically. However, such tests as could be made suggested that this material would not coagulate in water, would quickly settle and readily respond to agitation and remain in suspension with ordinary tank mixers. Years of operation have verified these facts, this material is hydraulically discharged to a lagoon with a maintained water level to cover the material and prevent its drying out and blowing away. The first classification of fly ash—that in the combustion chambers—is not subject to hydraulic handling except in open troughs. In contact with water this material turns into a brownish pasty mixture which clogs pipes and hoppers.

Sampling extending over a 30-minute period under representative conditions, indicated that these flue gases contained 0.014 grams per 14.78 cu ft of gas whose CO_2 content varied from 3.0% to 6.8%. In other terms the particulate amounted to 0.0136 grains per cu ft. However, with present air pollution ordinances this field determination must be recalculated to the stipulated 12% CO_2 and in accordance with such ordinances the laboratory report classifies the flue gases as containing from 0.0244 to 0.058 grains per cu ft of gas.

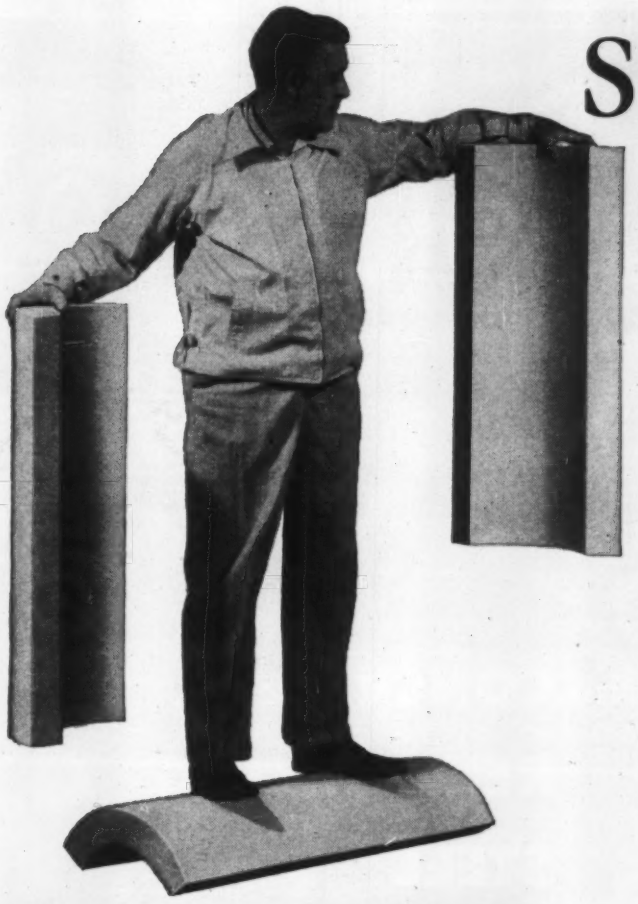
Most air pollution ordinances require that the field determinations be expressed in terms of pounds of dust per 1,000 lb of flue gases calculated to 50% of excess air. This second statement of the case is obviously pure calculation and again requires that the actual field determinations be adjusted to CO_2 conditions which are not characteristic of incinerator practices, whereas the simple conversion of grams per cu ft to pounds per 1,000 lb would indicate 0.0535 lb per 1,000 lb. The laboratory reports 0.093 pounds per 1,000 pounds of flue gases when calculated at 50% excess air.

Recently the wet process of fly ash interception has been introduced, and in the near future data as to the success of this method and its practicability will be available. To develop some practicable standard applying to incinerator practice and forming the basis of reasonable regulations for wet-process interception will require still additional tests on various types and sizes of incinerators. This information will necessarily be pooled to develop a satisfactory standard.

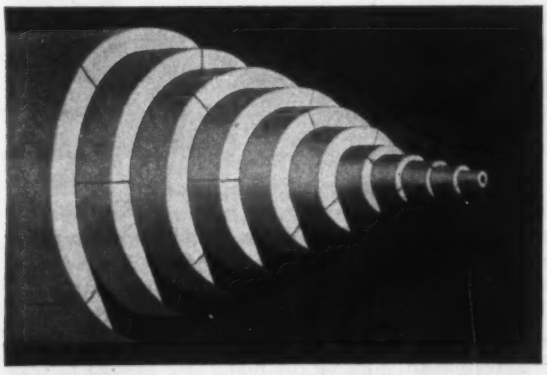
The time is ripe for such an effort toward modification, for the correction of existing regulations which now penalize incinerator practice to an undeserved extent.

strength...

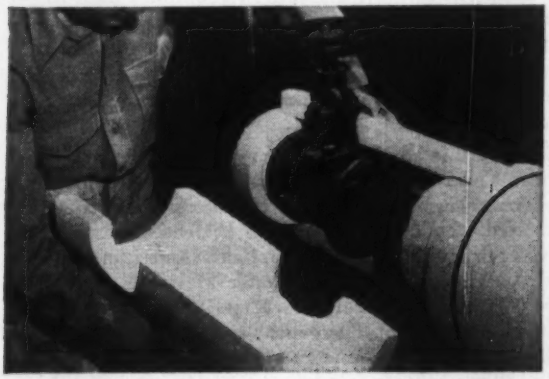
just one of many reasons why Kaylo® is the king of high temperature insulations



Boiling water will not break Kaylo down. When soaked, it retains much of its strength. Dried, it returns to its original thermal efficiency.



Snug nesting where necessary. O. D.'s of Kaylo insulation correspond to O. D.'s of standard pipes from ½" to 24", assuring proper fit and nesting where necessary.



Easily cut with ordinary tools. Kaylo is light-weight and so workable that it can be removed and replaced for line inspections without waste.

Tested in thousands of industrial applications, Kaylo has flexural strength, compressive strength and resistance to abrasion far above normal requirements for heat insulation. It is a flawless performer at all temperatures up to 1200°F . . . through the hot water and low-pressure steam ranges and through the super-heated steam range. Its low coefficient of conductivity is the result of the smallness and number of its insulating air spaces, which present a material internal surface of approximately 100 acres per cubic foot.

Kaylo is made both as block and as molded pipe insulation with the widest range of sizes, forms and thicknesses of any high-temperature insulation. Now distributed by Owens-Corning Fiberglas Corporation, it provides, together with Fiberglas* Industrial Insulations, the most complete and versatile line of plant insulations available. For complete technical data, see our listings in Sweet's File, Chemical Engineering Catalog, or Refinery Catalog, or write: Owens-Corning Fiberglas Corporation, Dpt. 145E-19, Toledo 1, Ohio.

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Di STASIO & VAN BUREN

CONSULTING ENGINEERS

receives

1955 Award

of the **CONCRETE REINFORCING STEEL INSTITUTE**

Maurice P. Van Buren (left) and Joseph Di Stasio (center) receiving the 1955 Concrete Reinforcing Steel Institute Award on behalf of their firm. Vernon P. Jensen (right) Award Committee Chairman, is making the presentation at the 31st Annual C.R.S.I. Meeting at the Greenbrier Hotel, White Sulphur Springs, West Virginia.

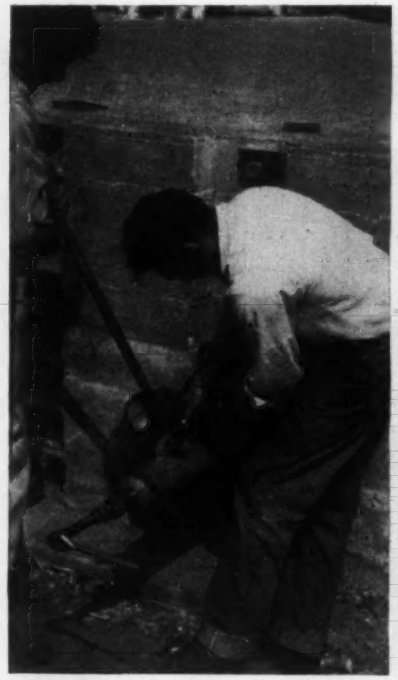
The firm of Di Stasio & Van Buren, well-known consulting engineers of New York City, has received the 1955 Award of the Concrete Reinforcing Steel Institute for its contribution to the advancement of reinforced concrete construction.

The award was made in recognition of the firm's pioneering and development work on the Flat Plate System of reinforced concrete construction—a system now coming into general use because of its economy and flexibility of design.

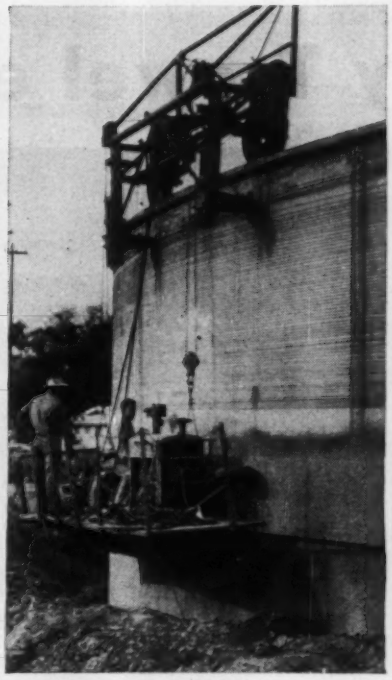
The evolution of the Flat Plate System dates back to the 1930's. Di Stasio & Van Buren developed the design procedure now being used for the Flat Plate System. One of their early outstanding projects utilizing this system is the Clinton Hill Housing Development, built during World War II in Brooklyn, New York.

The C.R.S.I. Award is administered by representatives appointed by the American Concrete Institute, Associated General Contractors of America, and American Society of Civil Engineers. The 1955 Award Committee consisted of: Chairman—Vernon P. Jensen, Manager of Development, C. F. Braun & Co., Alhambra, Calif. (American Concrete Institute); Earl J. Wheeler, President, Frank Messer & Sons, Inc., Cincinnati, Ohio (Associated General Contractors); and Professor H. J. Gilkey, Head of Department of Theoretical and Applied Mechanics, Iowa State College, Ames, Iowa (American Society of Civil Engineers).

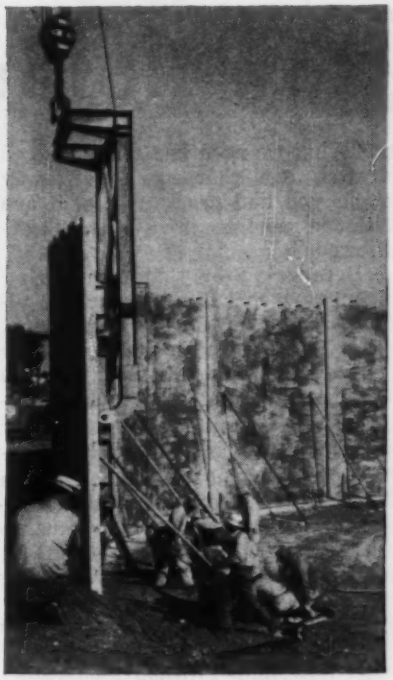
CONCRETE REINFORCING STEEL INSTITUTE, 38 South Dearborn Street, Chicago 3, Illinois



VERTICAL PRESTRESS was applied to nested precast tank panels by jacking cables cast in the concrete.



HORIZONTAL PRESTRESS was developed by wrapping tensioned wires around the 111-ft dia tanks.



PANELS WERE LIFTED by vacuum pads. Braces held panels in position until joints were gunited.

Prestressing a Precast Water Tank

Precast walls that are prestressed in two directions are key elements in two 1.4 mg water storage tanks just completed for the Southern California Water Co.

Wall panels for each of the 111-ft dia tanks were cast in 20 separate sections. Vertical prestressing was applied to the panels before they were moved by post-tensioning cables having six ¼ in. dia wires. Horizontal prestress involved wire wrapping after the panels were in place.

The precast wall panels resulted in a saving in form work and scaffold cost, and in the better concrete results in the horizontally cast panels than would obtain in poured walls.

• **Casting procedure**—The 6-in. thick wall panels were cast eight deep in five casting beds that were prepared by pouring a concrete slab to proper shape on a levelled spot on the ground.

Forms were mounted on the slab, reinforcing positioned and the first panel cast. After the forms were stripped they were moved up to form the next panel, cast on top of the first. This procedure was followed until all eight panels in each of the casting beds were poured.

Pouring the curved slabs, with the aid of a curved screed and low-slump concrete, proved to be only slightly more difficult than pouring flat slabs.

• **Stressing**—Vertical prestressing for each 16-ft wide panel was provided by seven cables spaced on 2½-ft centers, each cable having six ¼-in. dia wires. Prestress was applied after the panels had cured and before they were moved.

Tensioning was applied from one end with the cables cast solid into the bottom of the panels.

Initial stress applied to the wires was 150,000 psi. This was considered to result in a 127,500 psi working stress, which means that initial compressive force of each 6-wire unit was 44,100 lb and that the working stress of each unit was 37,385 lb. Result was an average compressive stress in the concrete of 208 psi.

Panels were lifted with vacuum pads specially built to fit the shape of the panels.

Joints between panels were gunited. On curing, some of the gunited joints cracked, but closed when the horizontal prestress was applied.

Horizontal prestress followed the Preload method of wire wrapping. Wires were drawn through a die by a machine traveling around the tank to reduce diameter from 0.162 to 0.148 in. and produce a 120,000 psi stress. There were 10 wires per foot at the top of the 19-ft high tank walls and 42 wires per foot at the bottom. Variation was needed to provide necessary resistance to horizontal thrust of the water load. Horizontal compressive stress with an empty tank varies from 200 to 950 psi.

• **Details**—Roof design calls for a 4½-in. thick flat slab roof supported on columns spaced 16 ft 10 in. on centers. Columns are 14 in. in dia. Reinforcing steel in the roof was sized in accordance with a model analysis made by the Presan Corp.

Tank walls are designed for free movement: The bottom rests on a graphite impregnated pad on a steel trowelled surface; a rubber ring working against steel insets provides water tightness; top of the walls are also steel trowelled after they are in place.

Eight of the 20 panels in each tank are recessed at the top to take lateral loading from the roof into the walls.

• **For peak calls**—The new tanks will provide storage to meet peak demands in one of Southern California Water Company's 32 systems—south and west of Los Angeles.

Contractor on the job was Haddock Engineers, Ltd., who held a $130,000 contract. The tank was designed by Leeds, Hill and Jewett, consulting engineers of Los Angeles with N. D. Whitman, Jr., serving as consulting structural engineer. L. J. Alexander is chief engineer of the Southern California Water Co.

(Advertisement)

New Rotary Trowel enters field

"What we need is a really rugged trowel, one that can't get away from you and crack up", said one veteran concrete man when interviewed.

Because Stow Manufacturing Company, makers of concrete vibrators and screeds in Binghamton, New York decided to make a Rotary Trowel, an exhaustive study was conducted to find out what concrete men wanted in a Rotary Trowel. Stow knew they were getting into a field where competitive manufacturers were well established and that they had to come up with a machine that would be superior to any other on the market.

Thousands of dollars were put into the design and perfection of the Stow Roto-Trowel. The result: the G-34 Roto-Trowel; a rugged, safe, easy-to-handle machine that trowels smoothly.

Probably the most outstanding feature on the G-34 Roto-Trowel is the stationary guard ring, instead of the conventional rotating type. With the rotating type guard ring, the operator must be extremely careful whenever he works near walls and obstructions; if the ring should touch any object, it could wreck the trowel and injure the operator. With the Stow Roto-Trowel's strong stationary guard ring, the operator can trowel much closer to walls and obstructions with no fear of accidents.

Another feature, the squeeze-type dead-man control on the hand-grip, stops the trowel blades the instant the operator releases pressure; however, the engine continues to operate, eliminating the necessity of re-starting the engine. This is an important safety device, because it eliminates clutches, which sometimes become faulty and grab, causing serious accidents plus the expense of a new clutch.

THIS DEAD-MAN CONTROL on the wide cross-bar of the handle immediately stops the machine, but not the engine, when it is released.

STOW ROTO-TROWEL FINISHING A SUPERMARKET FLOOR. Before trowelling, a Stow screed was used to strike-off the surface. By screeding and using a 1" slump concrete, the concrete set up so fast, they were able to put the Roto-Trowel on the job only 1 hour after screeding.

The Roto-Trowel's dead-man control is fool-proof; it works by tightening an idler pulley against the belt drive. Releasing the lever loosens the belt, immediately stopping the rotating blades. With this type of drive, the operator can throttle the trowel down from 100 RPM to 25 RPM where special conditions require slow speed.

The Stow G-34 Roto-Trowel is powered by a 2½ HP gasoline engine which supplies ample power for even high slump concrete. The unit has an adjustable handle so the operator can set the height to his most comfortable operating position. This feature, plus the wider handle, makes the Roto-Trowel much easier to maneuver, regardless of the height of the operator.

On a construction job where one Stow Roto-Trowel was put in among competitive trowels, the contractor discovered that his trowel operators were actually arriving on the job early each day in order to use the Stow Roto-Trowel. They found it much easier to handle.

A hook mounted on top of the engine makes it easy to lift the Stow Roto-Trowel to higher levels. A knob on the handle controls blade pitch while the machine is running. All three blades fit into recessed slots to insure correct seating; each is secured by a hand-turned wing nut for quick changing. Float blades are 10 x 14 inches; finish blades are 6 x 14. Both blades are made of special wear-resistant steel and can be reversed for double life.

The G-34 Roto-Trowel, complete with a set of float and finish blades, weighs 143 lbs.; sells for $375.00 F.O.B., Binghamton.

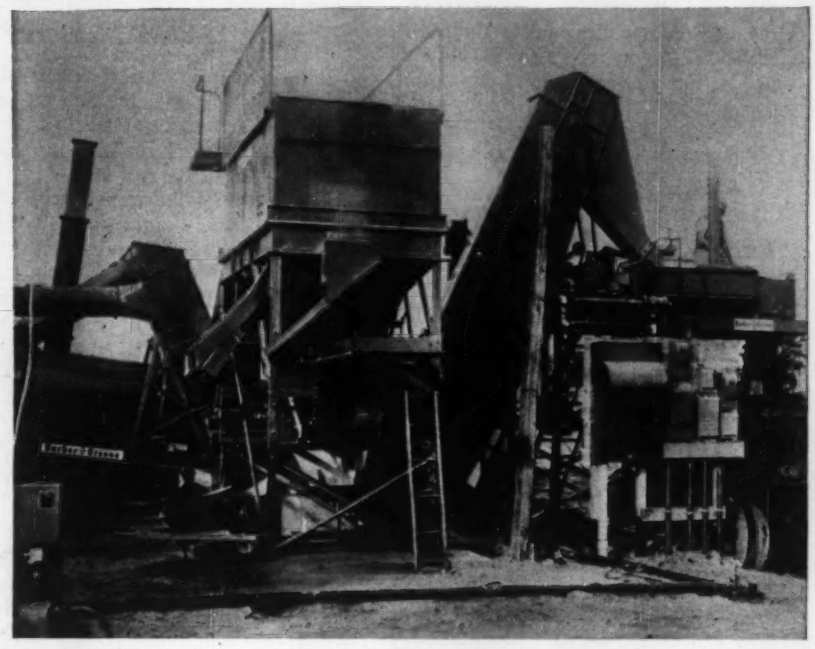
A 34-inch electric trowel is also available with a 1½ HP motor.

Contact your nearest Stow Distributor for a demonstration, or write Stow Manufacturing Co., 285 Shear St., Binghamton, N. Y. Ask for Stow's complete catalog on Concrete Vibrators, Portable Concrete Grinders and Vibrating Screeds, and Rotary Trowels.

STOW MANUFACTURING COMPANY

285 Shear St. Binghamton, New York

Originators of the Flexible Shaft



B-G's 840-B Offers Big Plant Features

The versatility of large units is said to be offered in Barber-Greene's Model 840-B asphalt plant—an outfit with a capacity of 20 to 50 tons per hour.

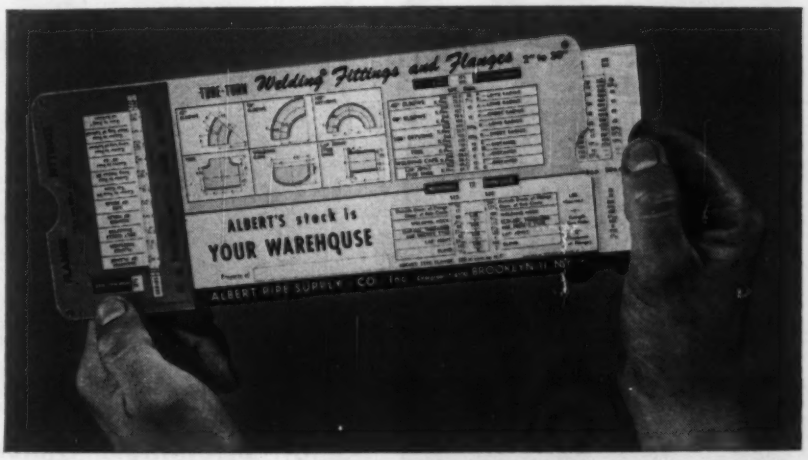
The pugmill section of the mixer may be obtained separately and mounted permanently for the production of stabilized mixes, or if portability is desired, the complete mixer, with rubber tire mounting and adjustable jacklegs, may also be used for the same function. For emulsions, or other cold-mix bituminous materials, or for stabilization work where accurate proportioning of aggregate and binder is desired, the mixer may be fed from a portable hopper-feeder-elevator unit. In this set-up, the hopper is fed by a conveyor, a crane or a front-end loader. The apron feeder in the hopper is equipped with an adjustable, calibrated gate mechanically interlocked with the asphalt pump on the mixer for positive and consistent proportioning of the ingredients. Capacities in this set-up are said to often exceed 50 tons per hour.

For the production of hot mixes, the same mixer-hopper combination is employed and a B-G portable dryer is added to dry the aggregate and bring it up to proper mixing temperature. Either of two dryers may be used, depending upon tonnage requirements. One offers 10 to 25 tph output; the other 30 to 45 tph. Both are equipped with built-in dust collector cones for fines conservation and are also equipped with built-in bucket elevators for feeding the dryer and discharge to the mixer. Like the mixer, both have jackleg supports and both are rubber tire mounted for portability.

When two, or three-bin screening and separation of the aggregate sizes after drying is required, a portable gradation control unit is interposed between the dryer and the mixer. In such an installation, the single-aggregate hopper and feeder are removed. The apron feeders on the gradation control unit which proportion the aggregate are mechanically interlocked with the asphalt pump on the mixer. Each bin of the gradation control unit is equipped with a separate, adjustable, calibrated gate. Once the aggregate proportions have been established, each gate is set and locked and the mix proportions remain constant. A fourth bin may also be added if it is found to be needed. Capacities in this multiple aggregate set-up reach 40 tph.

Complete cold aggregate feed systems are obtainable for either the single or multiple aggregate set-ups. These systems include two, three and four-bin portable hopper units with each hopper equipped with a separate adjustable gate. In single aggregate set-ups, this permits proportioning of the mix right at the cold feed. In multiple aggregate set-ups where proportioning is done by the gradation control unit, these cold feed systems are designed to prevent unnecessary overflow of any aggregate size which may be present in abundance, or shutdown because of intermittent shortage of any particular size.

Of similar design, stationary two-bin hoppers and two compartment bulkhead feeders are available. Likewise, complete conveyor feed systems



Card Gives Quick Pipe Information

The Albert pipe slide card can be used to find information on size (½ to 24 in.), schedule number, wall thickness, weight per foot and pressure at yield. Also available on the card is welded flange and fitting information on size (2 to 30 in.), weight per piece and other dimensional data. Also, sizes (2½ to 18 in.) and other data on cast iron and steel flanged fittings are given. The card is distributed without charge. Albert Pipe Supply Co., Inc., Berry & N. 13th St., Brooklyn 11, N. Y.

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may be adapted to the plant to fit special needs.

Special strength and abrasion resistant steels, roller chain, shaft and gear-box drives, replaceable pugmill paddle tips and liner plates are among the additional features of the 840-B plant series. BARBER-GREENE CO., 400 N. HIGHLAND AVE., AURORA, ILL.

Streamlined 190-hp Diesel Added to Caterpillar Line

A new 5¾-in. bore x 8-in. stroke, 6-cyl diesel has been added to the Caterpillar line. The Cat D342 is rated at 190-hp for intermittent duty, and replaces the company's D13000 engine.

The design of the D342 presents a clean, easily maintained unit composed of many parts already standard in all of the company's 5¾-in. bore engines. Valves, valve springs, valve rotators, valve seat inserts and piston assemblies on the new unit fit a wide variety of Cat engines.

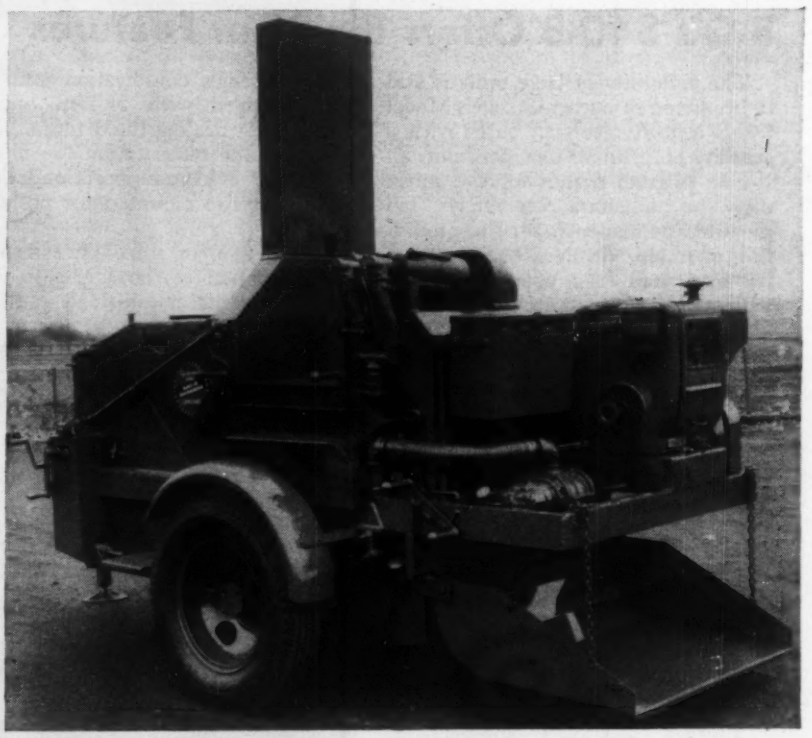
Features in the D342 include a new, larger capacity water pump; relocation of lines and tubes which have been placed inside the block for better appearance; and inexpensive, capsule-type fuel injection valves.

Three starting systems are available on the unit as attachments. These are: air, direct electric and gasoline. Electric starting for the gasoline starting engine is also available.

The engine is equipped with the simplified fuel injection system wherein each injection valve is a small capsule that allows easy, inexpensive replacement. Its large, single orifice combined with a precombustion chamber is said to afford foul-free operation on inexpensive, non-premium fuels. CATERPILLAR TRACTOR CO., PEORIA, ILL.

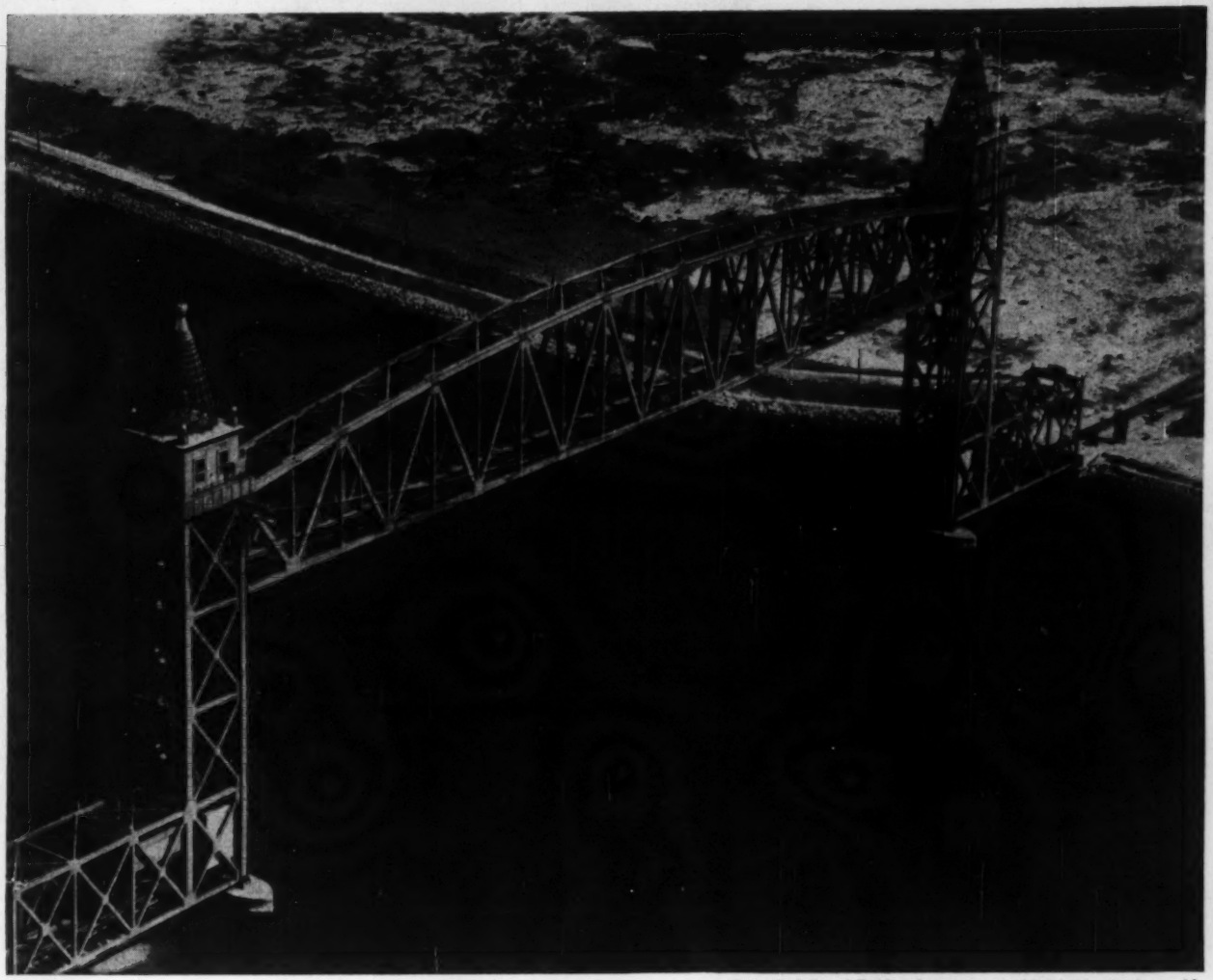
Dry Fluid Drive Designed To Handle Difficult Starts

A new development in industrial power transmission is called Flexidyne, and is described as a dry fluid drive. Based upon a new principle,



Small Bituminous Mixer Is Self-Contained

A new bituminous mixer, the Model 700 Trail-O-Patcher, has a capacity of seven tons of hot-mix and 12 tons of cold-mix. It has its own bitumen metering system, aggregate drying compartment and 200-gal heated bitumen tank. The mixer has twin heat insulated pugmills with a drying capacity of a rotary dryer 24 in. dia x 84 in. long. It has also a hand spray for applying bituminous material, a flame deflector gate that permits mixing out of the presence of flame, a roadable trailer with adjustable front leg, an exhaust stack hinged to facilitate storage and a discharge pan that holds 7 cu ft. Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2.



Cape Cod Canal Bridge, longest vertical lift bridge in the world.

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Perfect performance for 20 years

The main sheave bearings now in their 20th year of service on the Cape Cod Canal Bridge—the world's longest vertical lift bridge—have given excellent, trouble-free service.

TORRINGTON's long experience in the highly specialized field of bridge bearings has made this performance possible and resulted in economy and precise control for a number of other bridge installations that include single- and double-leaf bascule, retractable and floating spans.

TORRINGTON makes every basic type of anti-friction bearing including custom-made bearings for a wide variety of applications in heavy industrial equipment. Your TORRINGTON bearing engineer will be happy to select or help design the best bearing for your application. Call on him today.

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The Canal Street Bridge, Chicago, Ill.....1948
North State Street Bridge, Chicago, Ill.....1949
San Joaquin River Bridge, Mossdale, Calif.....1948
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Turtle River Bridge, Brunswick, Ga.

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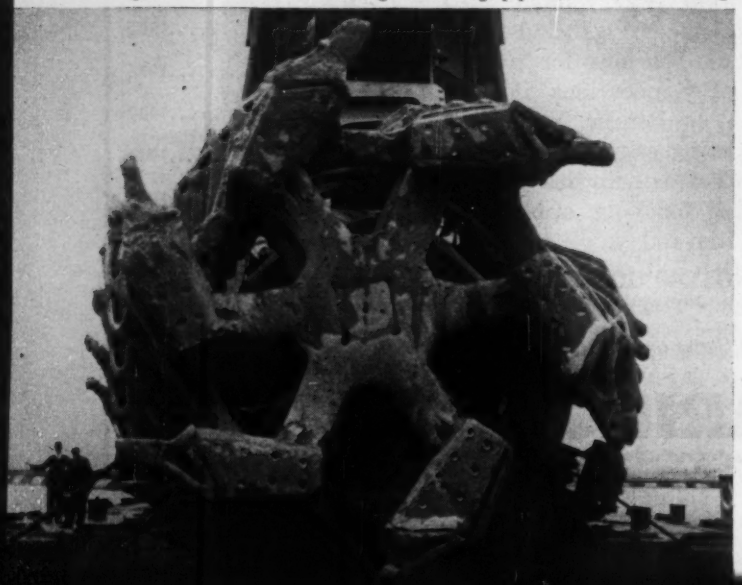
The St. Lawrence Seaway *2,347* miles from Duluth to the Atlantic

Ocean-going ships and Great Lakes vessels will carry an estimated *45 to 50* million tons of cargo per year over this deep-water system of rivers, lakes and canals. Here, the Ellicott Dredge *Hydro-Quebec* deepens and widens a vital canal link in the St. Lawrence River.

Ellicott helps cut a path *world's largest dredge at*

The mammoth cutter head of the *Hydro-Quebec* sucks up boulders weighing more than 1000 pounds and starts them through a discharge pipe line *almost a mile long.*



The *Hydro-Quebec*—world's largest hydraulic pipe-line dredge—is making history in the St. Lawrence River. This Ellicott-built giant is at work day and night moving 40 million tons of rock and clay aside for an important canal link in the new, international St. Lawrence Seaway.

The *Hydro-Quebec* is demonstrating once again what Ellicott Dredges have proved in thousands of operations throughout the world—that hydraulic pipe-line dredging is the most efficient and cheapest known method of moving water-bound solids.

Ellicott meets any dredging need

For 70 years, Ellicott has designed and manufactured dredges of all sizes for every conceivable dredging application. Ellicott Dredges reclaim swamp land, desilt settling basins and reservoirs, aid flood and mosquito control, build dams, create and maintain harbors and canals—and even mine valuable ores and minerals. Governments, industries

from Minnesota to the sea!

work on the St. Lawrence

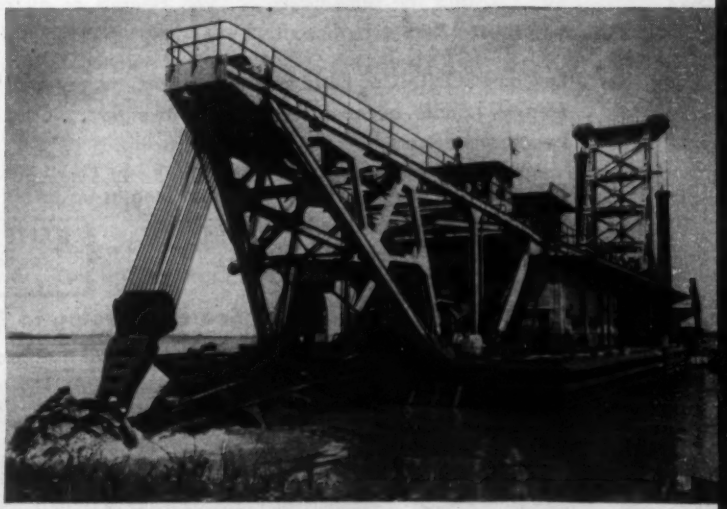
and municipalities have all relied upon Ellicott to solve their dredging problems.

Ellicott is prepared to help you

If you are faced with a dredging problem, however large or small, Ellicott's experience and facilities can work for you too. Ellicott is prepared to design, manufacture, deliver and service dredges ranging in size from the newest Ellicott portable 6 inch DRAGON MODELS to the huge *Hydro-Quebec*—and larger!

For information and details on Ellicott Dredges, or for help in servicing or modernizing your present dredge, write, wire or phone: ELLICOTT MACHINE CORPORATION, 1603 Bush Street, Baltimore 30, Maryland. *Agents throughout the world.*

ELLICOTT DREDGES



The Ellicott Dredge *Hydro-Quebec* is 280 feet long, 58 feet wide and can dig to a depth of 50 feet.

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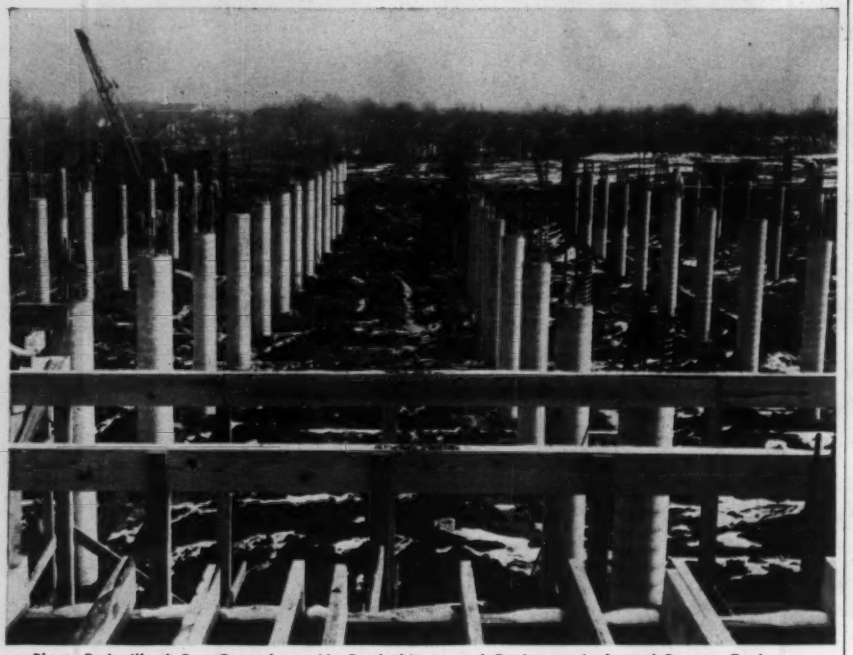
FIBRE FORMS

for round columns of concrete



Plant, P. Lorillard Co., Greensboro, N. C. Architects and Engineers: Lockwood-Greene, Engineers, Inc., New York. Resident Engineer: W. C. McDaniel. General Contractor: H. L. Coble Construction Co., Greensboro, N. C.

Lightweight, labor-saving formwork!

...low cost SONOTUBES® make it possible

A total of 220 SONOTUBES were used to form the round concrete columns for this new P. Lorillard plant in Greensboro, N. C. Of these, 164 were of 18" I.D. and the remainder, 22" I.D. Heights of all columns are between eleven and twelve feet.

Low cost SONOTUBE Fibre Forms save time, money and labor . . . take fewer men to handle because they are lightweight . . . take less time to erect because they require only minimum bracing.

SONOTUBES are supplied in specified lengths up to 50′ or can be sawed to your requirements on the job. In 26 sizes from 2" to 36" I.D.

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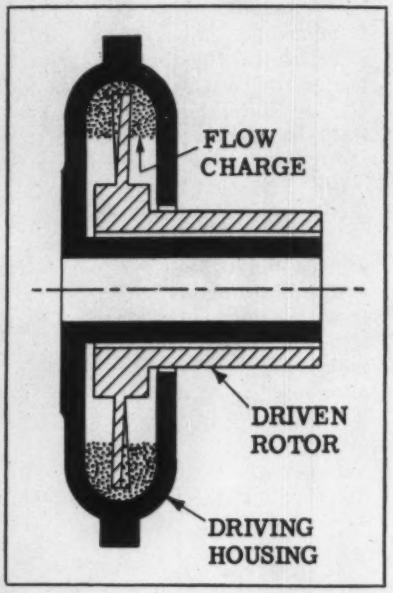
MEXICO: Sonoco de México, S. A., Apartado 10239, México, D. F.



the drive is said to be capable of handling difficult starting and reversing problems and gives a new kind of protection against shock and overloads. Its major advantages over other fluid type drives are based on the fact that at normal operating speeds it does not slip, and at the same time, in the case of an overload, it is slippage which gives protection.

Originated in Europe, where thousands of installations have already been made, the new drive has been redesigned to American standards and will be available from stock through distributors of the manufacturer. Delivery dates have not yet been announced.

The drive is made up of a housing, inside of which a rotor is free to turn concentrically. Between the two are fine particles of spherical steel shot, called the "flow charge," which acts very much like a fluid. It is the flow charge which transmits power from the housing to the rotor. This flow charge is easier to seal in than are liquids, has a high density and can stand relatively high temperatures.

The Flexidyne Drive works in the following manner. The motor is connected to the housing, and starts it turning at no load. The flow charge is thrown then to the circumference of the housing, is compressed by centrifugal force and revolves with the housing. The rotor, connected to the load, is started and accelerated by the friction and wedging action of the revolving flow charge. In case of an overload, before damage is caused, the Flexidyne rotor slips relative to the housing, overcoming the friction and wedging action of the flow charge. A thermal switch is available to auto-

matically cut the electrical circuit if an overload persists.

The amount of the flow charge determines the torque capacity. Because it is easy to vary the amount of this charge, the drive will give the exact starting torque needed for anything from the smoothest to the fastest start.

Accurate overload protection is ascured since the Flexidyne can be set to slip at anywhere from as low as 20% over full load torque to as high as peak motor torque. During starting and overload periods the current drew is at a minimum because with the standard setting the motor is never pulled down to less than 90% of synchronous speed. DODGE MFG. CO., MISHAWAKA, IND.

Alloy Wires Designed For Semi-automatic Welders

A new line of tubular fabricated alloy wires has been designed for open arc application through standard semi-automatic welders. Essentially, this is a process that requires no flux and offers the versatility of manual welding with the control of the full automatic.

Three materials are now in production by the manufacturer—a 50% high chromium hard-facing alloy, a 20% alloy for hard-facing and a Hadfield nickel manganese for build-up of manganese steel parts. The $\frac{3}{32}$-in. wires are identical in composition to the company's tubular electrodes and wires currently in use. Other materials will be announced as tests now under way are completed.

Savings in labor as a result of the exceptionally high deposition rate is but one advantage claimed for the new wires. Normal 10% loss for stub ends is eliminated and, since they are bare, the wires are approximately 90% efficient, and there is no slag removal problem.

In operation, semi-automatic welding using the tubular wires is much like manual welding but wire feed is continuous and both feed and arc control are automatic. Application by open arc gives complete visibility

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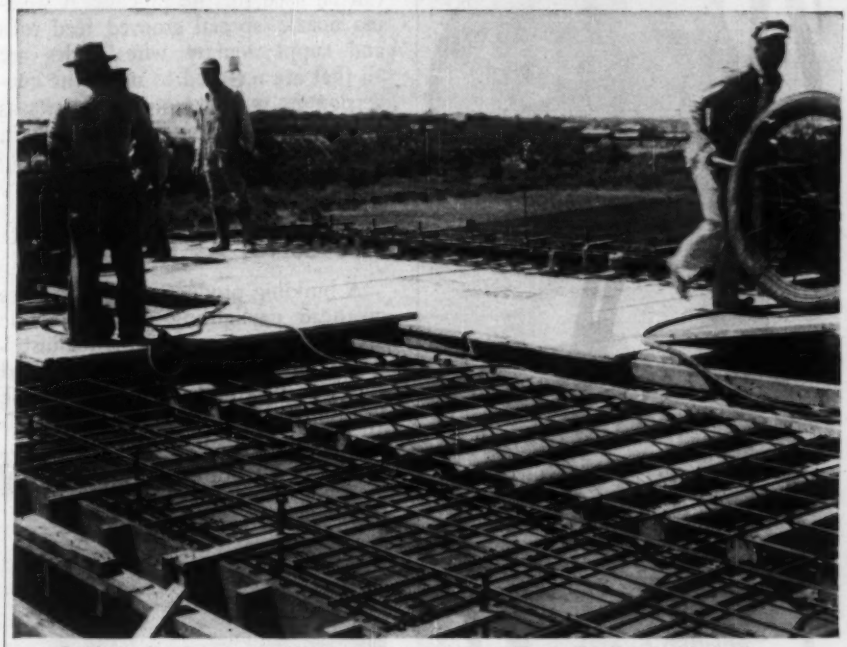
for voids in concrete construction



Residence, San Antonio, Tex. Staub, Rather & Howze, Architects, Houston. Francis J. Niven, Structural Engr., Houston, Luther Hill Const. Co., Contractor, San Antonio

Slab weight and deflection reduced!

... low cost SONOVOIDS® make it possible

SONOVOIDS form the hollows in the 28′ simple span, 11″ thick concrete roof slab for this residence in San Antonio.

The 6″ SONOVOID Fibre Tubes were used to reduce weight on the supporting members, achieve greater stiffness in the slab itself and to save concrete and reinforcing steel.

Low cost SONOVOIDS are easy to handle, simple to place and secure and are specifically developed for use in concrete bridge decks, wall, floor and roof slabs.

Supplied in specified lengths or sawed to your requirements on the job. Sizes 2.25″ to 36.9″ O.D. up to 50′ long. End closures available.

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(With Optical Micrometer)
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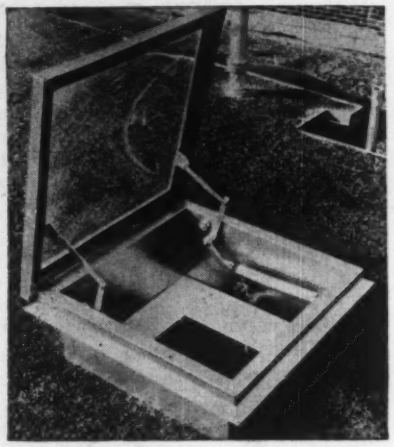
120 Grand St., White Plains, N. Y.

at all times. Deposits bond well to the base metal with very little penetration or dilution and either stringer beads or wide wash passes can be used, depending upon the part and type of deposit desired. Current required for the semi-automatic wires does not exceed 350 amps and a power source of not less than 400 amps is recommended.

Almost any standard semi-automatic welder, with minor adaptations, can be used for the process. A welding nozzle, special grooved feed rolls and supplementary wire guides are all that are required to make the conversion in most cases. Such parts as are necessary can be ordered as a kit. STOODY CO., WHITTIER, CALIF.



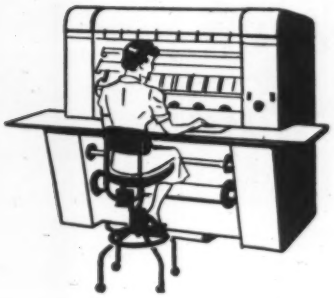
Plastic Dome Admits Light Also Serves As Fire Vent

A building product, which provides overhead daylighting plus automatic fire venting is now available for installation in factories, institutions and commercial buildings. The Wascolite Pyrodome admits daylighting through an acrylic plastic dome and is equipped with a fusible link that snaps under excessive heat to activate lifting levers which raise the dome. This allows heat, smoke and fumes to escape and enable firemen to localize the fire. Also available is the Pyrovent, which has a solid aluminum cover instead of a dome. WASCO PRODUCTS, INC., 93P FAWCETT ST., CAMBRIDGE 38, MASS.

Air-Cooled Industrial Engines Debut

A new line of air-cooled, valve-in-head industrial engines ranges from 20 to 75 hp. The new family of engines includes two cylinder verticals, opposed 4's and V-4's. The first of these, the C2-90, is already in production with tooling on other models now underway. The Model C2-90 is a two cylinder, vertical, valve-in-head engine that develops 30 hp at 3,000 rpm. It employs a full pressure lubricating system, a double row ball thrust bearing for pump and other applications, replaceable copperlead connecting rod bearing inserts, special crankshaft extensions to fit customer requirements and stellite valves and valve seat inserts. Valve rotators are available as optional equipment. Base mounting dimensions, shaft dimensions and mounting bracket dimensions are interchangeable with other major air-cooled engine units. Valve-in-head design with aircraft engine type finning reportedly provides valve cooling in high operating temperatures. A second model, the CV4-180, which delivers 75 hp at 3,600 rpm, is expected to be available for delivery within a few months. Lycoming Div., Avco Mfg. Corp., 550 S. Main St., Stratford, Conn.

Here's the Inside Story . . .



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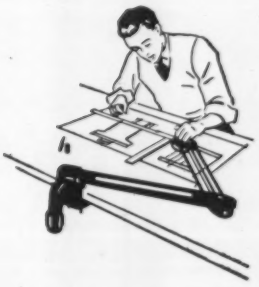

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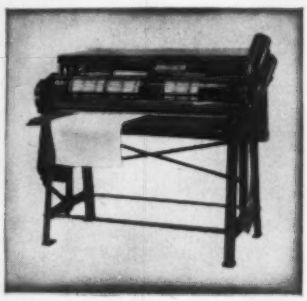
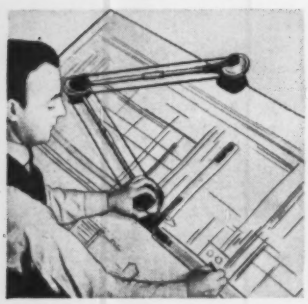
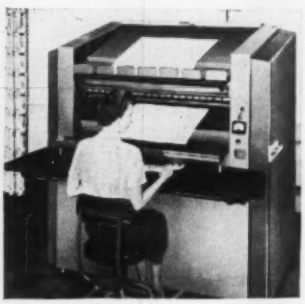
1928—FIRST pencil tracing cloth introduced by Bruning.



1929—FIRST fume-free diazo reproduction machine introduced by Bruning.



1932—FIRST band-type drafting machine introduced by Bruning.



1955—Latest, most advanced whiteprinter introduced by Bruning.

- **First pencil tracing cloths**
- **First non-discoloring tracing paper**
- **First waterproof reproduction tracing cloths**
- **First fume-free diazo reproduction process in America**
- **First band-type drafting machine**
- **First hollow shaft erasing machine**
- **First single-action vacuum frame**
- **First traveling light vacuum frame**

Above are only a few of the many, many products and product improvements which Bruning research and engineering have contributed to the engineering and drafting industry in the past. Today, by virtue of its modern laboratories and large engineering staffs, Bruning still leads the way in the development of new and better products for you. Within the past year, for instance, Bruning introduced newly improved tracing papers and cloths that set a new standard in their field . . . newly improved sensitized materials that give you quality reproduction never before attainable . . . new, improved Copyflex machines that set at a new high in quality, convenience, and economy of reproduction. You can depend on Bruning for more of the same in the future.

Bruning Production Brings You Products of Consistently High Quality

A manufacturer as well as supplier, Bruning controls quality all the way to make sure you get products of dependable, consistent high quality.

Bruning tracing papers, noted for their high translucency, fine drawing surfaces, and permanence, are Bruning-controlled, step by step, from the mill . . . through processing . . . to the ultimate user.

Bruning exercises the same rigid control, uses the most modern equipment in its paper converting plants at Teterboro, N. J., Chicago, Kansas City, and Los Angeles, to provide you with 85 varieties of the finest sensitized papers, cloths, and films.

And the famous Copyflex reproduction machines are manufactured in Bruning's own large, modern Chicago plant — quality-controlled from raw material to final assembly to provide you the finest in reproduction performance.

You Get Better Results at Lower Cost, Your Job is Made Easier Because . . .

Bruning Brings You a Complete Line of Highest Quality Products

- ***Assures Efficient Integration of Companion Products***
- ***Simplifies Ordering and Stocking***

You, like draftsmen, engineers, and architects everywhere, can profit by using Bruning as your *Single, Convenient, Dependable Source* for everything you need in top-quality drafting room supplies. There is a Bruning product to suit every need, fit every budget. You simplify ordering and stocking, save time and money. Companion products, like Copyflex reproduction machines and Copyflex sensitized materials, are made to work together to give you premium results.

COPYFLEX REPRODUCTION MACHINES

Copyflex offers all the benefits of diazo black-on-white reproduction — speed, economy, quality prints—plus problem-free installation and operation. No fumes, no exhaust ducts. There's a model to meet every need.

COPYFLEX SENSITIZED MATERIALS

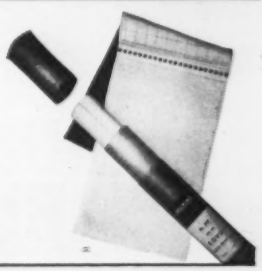
Bruning offers an unrivalled selection of sensitized papers, cloths, and films, available in a variety of sizes and weights, in sheet or roll form. Papers come in white and five tints.

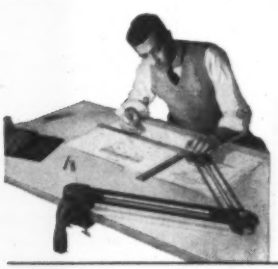
BRUNING DRAFTING EQUIPMENT AND SUPPLIES

Bruning's wide selection includes not only standard items, but such special aids as dotting pens, proportionate dividers, planimeters and Wrico lettering sets.

BRUNING TRACING PAPERS AND CLOTHS

These new, improved drawing mediums set a new high standard in translucency, pencil-and-ink-taking qualities, and permanence. Choose from a complete variety.





BRUNING DRAFTING MACHINES

Choose from a range of models and prices. Patented "Equipoise" gravity compensator, exclusive Touch Control Indexing provide unrivalled simplicity, precision, and ease of operation.

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These easy-to-use machines do a better job of erasing, save time. An extra-long, seven-inch eraser prevents "fly-out." They are quiet, cool, vibration-free tools ideal for all departments.

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Everything for the drafting room, in a range of materials and styles to meet every price requirement—including famous Hamilton Auto-Shift drafting tables and Unit-System files.

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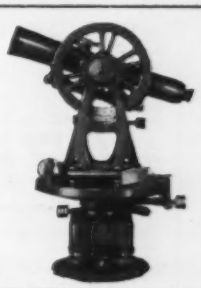
This complete line features famous Brunson precision surveying instruments with exclusive dust-proof ball bearing construction for lasting accuracy, minimum maintenance, ease of operation.



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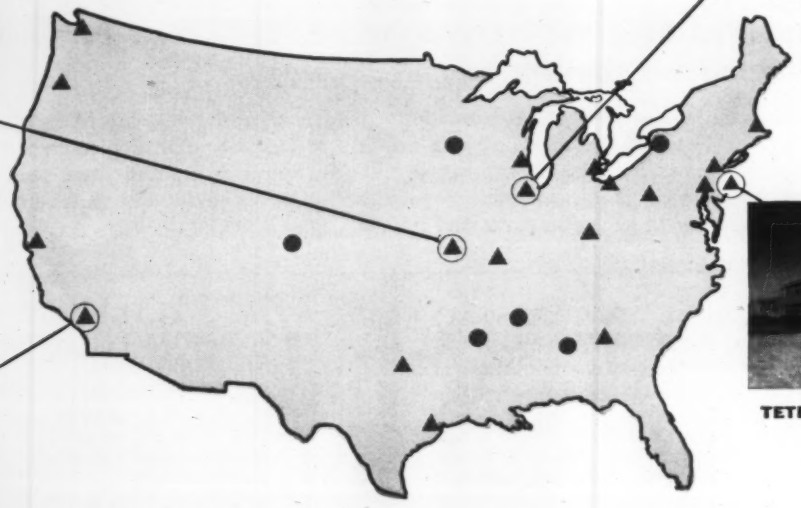
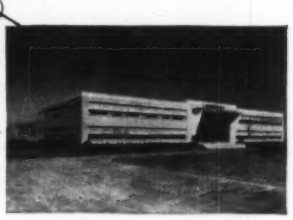
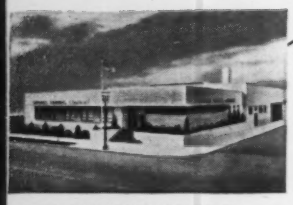




TETERBORO, N. J., PLANT



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AT BID OPENINGS Commissioner Zurmuhlen used to be on other side of table.

One-Time Construction Engineer Tightens City Public Works Management

Frederick H. Zurmuhlen (he pronounces the "uh" as the "e" in see) is a rare bird indeed.

Land surveyor, licensed engineer and registered architect, with experience in consulting, contracting and building management, he has brought to the public works agency of the nation's largest city a brand of administration it had never seen before.

As commissioner of New York's big (4,300 employees) Department of Public Works, he administers—with an attention to detail born perhaps of his engineering background—the design, construction and operation functions of an organization with an annual construction budget bigger than many states ($58 million in 1954).

As top executive for the city in spending these millions annually on new construction, Commissioner Zurmuhlen has earned a respect that contractors accord only the just. He's a hard man—outwardly, at least—and his contracting experience has stood the city in good stead in many instances of construction.

• **His contractor relations**—Over the eight years he has been in the post (he smiles when he says "eight years too many") Zurmuhlen has done much to refine contractual operations. He has insisted on seeking a credit to the city whenever he felt that one was due. Some six years ago he first put the 4(b) clause into city contracts, to put an end to the well-known contingency item and make possible credits on subsurface work where unexpected conditions are encountered. Section 4, paragraph (b) says in part:

> "Should the contractor encounter . . . subsurface conditions at the site materially differing from any shown on the contract plans or indicated in the specifications or such subsurface conditions as could not reasonably have been anticipated . . . the contract may be modified . . . the amount of any increase or decrease of cost resulting from such conditions shall be subject to the prior written approval of The Comptrollers Chief Engineer."

It is the "'decrease of cost" wording the commissioner concerns himself with on questions of credits.

This particular section of the contract has been worked before to the

COMMENT
from the
BUTLER ENGINEER

Butler Makes Fortune (April Issue)

We've just learned that Butler Roadbuilders Plants are to be a feature of an article in FORTUNE which discusses the 100 billion dollar Highway Program.

We've always suspected Butler equipment was tops but it pleasures us no end to have our suspicion substantiated by our selection for this great magazine.

This article will, in part, deal with the Turnpike type of construction for which Butler Bin has developed an electronic, *one-man-operated,* completely automatic Roadbuilders Plant. Incidentally, as if one-man-operation is not important enough, these new Butler Plants are far and away the most portable ever built. Any questions? Please write.

The Butler Engineer — in fact everyone in the organization — not infrequently goes to unusual lengths to lend a helping hand. F'r instance, a customer ordered a Ready Mix Plant. Gonna erect it along a track out in the country beyond the edge of town. Got his garage and shop built when suddenly everyone in the area raised a sky-shaking squawk. This despite the fact that the location had been zoned for industrial development for 30 years . . . Our customer 'phoned me and asked me to meet with the Town Board at a public hearing — at 8:00 P.M. of a Saturday night. Nice time for a meeting. But I grabbed a 'plane and flew several hundred miles to speak my piece in our customer's behalf. Won't go into details, but some of the hysterical protests were so ridiculous as to be side-splitting. Anyway, "It was a tough fight, Mom, but we won."

Look at FORTUNE — April Issue.

The Butler Engineer

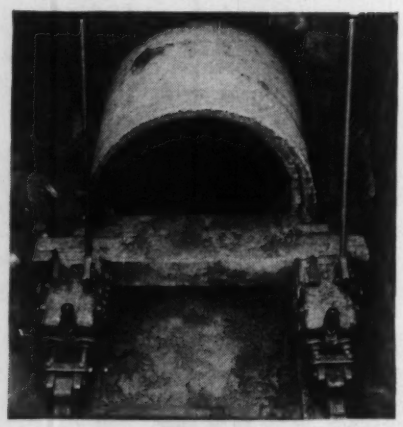
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

SAVE HOURS,

CUT COSTS ON YOUR

PIPING JOBS

PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing ¾ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.



GREENLEE

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ENGINEER-ADMINISTRATOR runs a department with 4,300 employees.

advantage of the city, as well as to that of scores of contractors. Instances of building construction where reduction are ordered in depth of excavation or size of footing, there have been clear-cut credits due the city, and collected for the city.

• **Case in point**—There is pending a case not so clearly cut. Briefly, it involves an open-cut intercepting sewer job in the Commissioner's home Borough of Richmond (Staten Island) where he is wont to do some occasional sidewalk superintending—even on Saturdays. The contractor on this work (Nicholas DiMenna & Sons, Inc. of New York City) won the job for $2,738,000, after having been given access to a geologic report made for the city years back, indicating water would be a problem in the area. This report was in error; the digging has been advantageously dry; and the contractor has about completed a very smooth job of construction.

Whether DiMenna owes the city a credit for unexpected surface conditions in this case, under clause 4(b), is now under discussion. It may not be settled until some time this summer when final payment is made, and even then it could go on to the courts for decision.

Commissioner Zurmuhlen admits he has not a perfect case in this instance when he points out the contractor's side of it; he stresses that the contractor has made an exceptionally well run job of the Oakwood Beach interceptor from the start. And he acknowledges that the contractor could claim to have bid what he did unprejudiced by the faulty geologic information. That is, the contractor might deny having included cost of extensive groundwater control in his bidding.

How this case may go is yet to be determined. Some feel the commissioner has a case of questionable merit. Others go so far as to imply that behind this action might be the city's Bowery Bay Extension sewer tunnel in Long Island City, where clause 4(b) is being stretched near its limit for contractors tunneling mostly is a mixed-face on a line the city's borings show to be totally in rock.

• **Matter of principle**—However, this ex-construction engineer in commissioner's clothing is not the type to be swayed from what he thinks right. His independent judgment appears to be valued, for he is working under his third mayor in a city where party-in-power may seldom change but commissioners generally appear and then fade away as political fortunes wax and wane.

His very independence has been the way to much of Zurmuhlen's accomplishment in the department—independence born of the fact that the job sought him. Here's the way he tells the story:

When ex-Mayor William O'Dwyer first came in office, he sought advice on a man for the then $12,000-a-year public works post. A mutual friend, a confidant of O'Dwyer, asked Zurmuhlen to suggest a few good men. He suggested three names, and while O'Dwyer found some objection to each of the three he was sufficiently impressed with them to ask to see the man doing the suggesting.

First time Zurmuhlen met O'Dwyer was when called to City Hall to be offered his present position. He took the job "at considerable loss in pay", and because he had not sought it, was able to make some immediate changes: (1) he got the salary raised to $15,000 (it's now $17,500) and (2) he got a free hand in picking his own deputies.

• **Department reorganized** — Further exercising his independence, the new commissioner gave his department a complete reorganization. Whereas before it had been split functionally into design, construction and opera-

Architect's drawing of the 25-story skyscraper made possible by ingenious use of welded design.

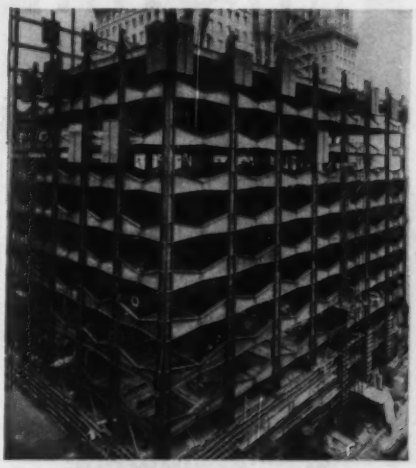
Close-up of finished weld between beam flange and column. "Fleetweld 5" and "LH-70" were used throughout the job.

Only $304 per ton frame cost with welded design!

THIS 25-story San Francisco skyscraper, with a 5,300-ton steel frame, has been erected for a cost of only $304 per ton. Erection of the building with welded design breaks a construction halt in San Francisco due to strict demands of the 1948 building code.

Lincoln engine-driven welders and electrodes were used to effect maximum economies possible with welded design of this 459,000 sq. ft. office building.

You can make similar welding savings by using welded construction. Get latest structural cost-cutting facts by writing on your letterhead to:



Erection of the Equitable Life Assurance building in San Francisco showing tapered continuously welded columns and "butterfly" spandrel beams which are welded to the columns.

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tion divisions; he saw immediate benefit in regrouping to fit the variety of public works over which he has responsibility.

"You had Dick Gould, one of the country's authorities on sewage treatment, in charge of a design division, responsible for design of bridges, buildings—things aside from his prime interest. In charge of construction you had J. Frank Johnson, whose first love was bridges. And we had Al Morgan, one of the best, if not the best in the country on building management—he's since left me for a job paying more money—in charge of operating not only buildings but also sewage treatment plants and bridges."

This situation, described by the commissioner, was corrected by organizing as at present into four major divisions: bridges, buildings, sewage disposal and building management with engineering services (borings, materials testing, etc.), vehicles, shops, legal and administrative divisions as secondary units servicing the major divisions.

Zurmuhlen may well be remembered as the commissioner who cleaned up pollution along the city's miles of beaches and harbor front. The $119 million stage one of an undertaking to treat close to 700 mgd and thereby clean all recreation waters is near completion. Stage two, total treatment for the vast city, involves $175 million worth of design and construction yet to come.

• **Broad accomplishment**—This outstanding pollution control program is unmatched anywhere, but it is not Zurmuhlen's sole accomplishment. The Brooklyn Bridge has had its roadway rebuilt. For his work on city buildings he has gained architects' recognition. He deplores extremes in modern architecture, thinks it is something we will come to regret. He is not for gargoyles but wants some ornamental beauty put back into public buildings by integrating both sculpture and painting with architecture.

An active crusader for professionalism and the benefits of engineer licensing, he is insistent on the P.E., R.A. after his name—and as insistent that the abbreviations do not appear in reverse order, as reportedly once happened on a job sign, to someone's chagrin.

From his air-cooled office in the city's Municipal Building, he can summon any one of ten division heads, or all ten at once to conference, by flipping switches on an intercom at his elbow—the "juke box", as his deputies call it.

On the paneled walls of the commissioner's spacious office are hung a dozen certificates, awards and honors—further evidence of his deep appreciation for the values of professional recognition.

• **Behind his personality**—Beneath a hard exterior, here is a man quite apt to go soft, without it being made generally known, for a deserving employee in some need. He is a man of strong loyalties, among which one of the strongest is for Manhattan College, of which he is a trustee and an honored alumnus.

Attributing what success he will admit to good schooling and to luck in the type of experience he was able to accumulate at an early age as well as through the years, the commissioner lists: a valuable (to him) stint with the Army Engineers in stateside base maintenance work in World War I; a score of years as consulting engineer and architect; a period as assistant state engineer of the Public Works Agency from 1933-35; two years as chief engineer in the Reconstruction Finance Corporation; four years as a consultant to the New York World's Fair Commission; three years as chief engineer of the Walsh Construction Company-George F. Driscoll Company contracting combine on the Trinidad Army Base; and the period 1944-47 as chief engineer of the George F. Driscoll Company in New York.

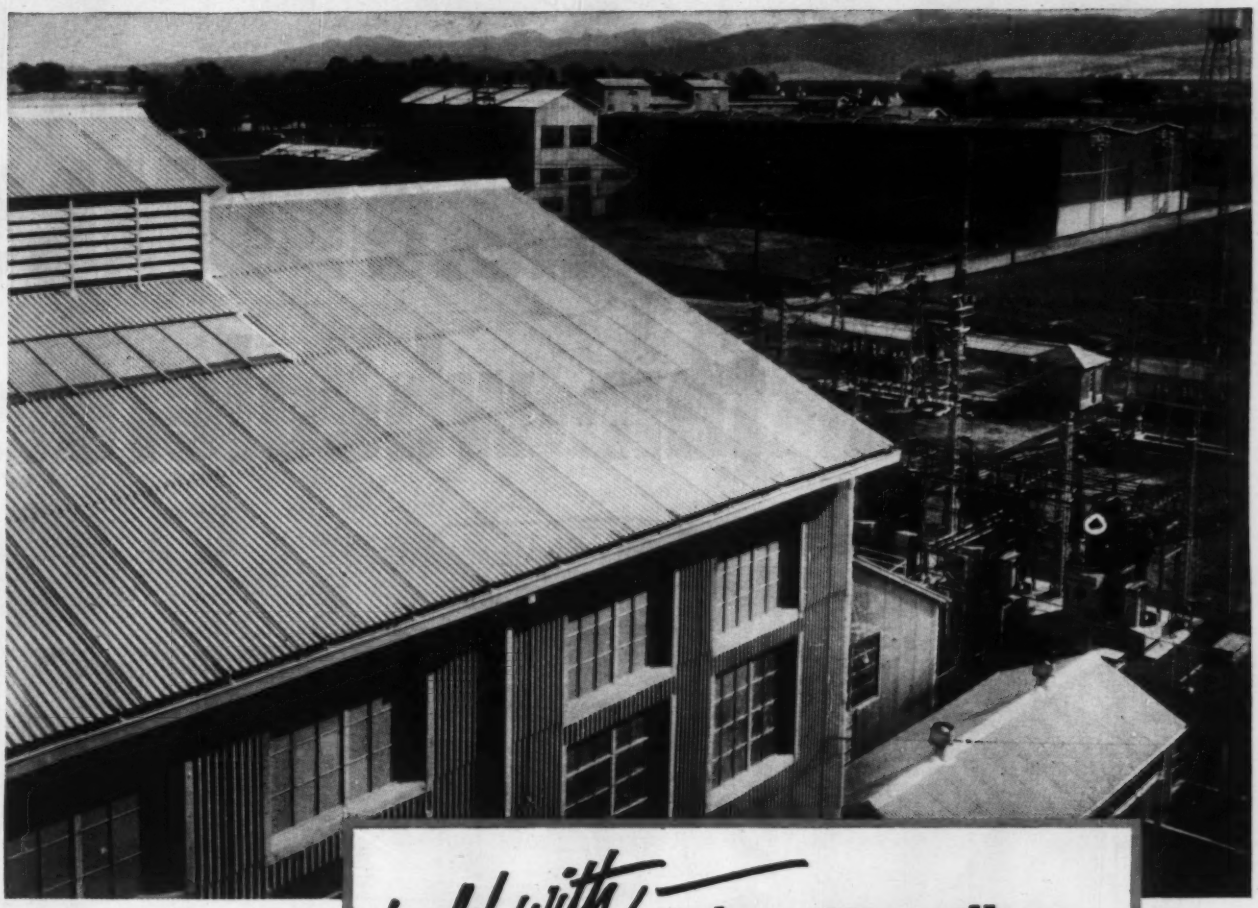
To the public, Zurmuhlen is a department head who obviously must have something to have remained through three changes in city administration.

To his employees—600 of them are engineers and architects—he is a taskmaster. He does not demand to see and sign every paper that goes out, but he certainly keeps close personal touch on all that happens in his department. He admits to this rigid control over his subordinates but claims to know no other way of administering his rather large responsibilities.

To contractors who do work for the city, he is tough. But they'll all admit a change for the better from the days not too long ago when the common thing was to sue the city for claims upon completion of a public works contract, the days when a lucrative judgment against the city for maladministration of contract was not rare.

(*Men and Jobs continued on page 72*)

No costly maintenance problem here



The Johns-Manville Corrugated Transite roof of this oil refinery building will give many years of dependable service, provide protection against fire, and will remain unaffected by the severest weather conditions.

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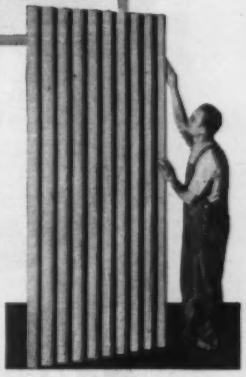

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- Easy to nail to wood
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For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing . . . permits fast economical construction of maintenance-free industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it . . . it's fireproof, rotproof and weatherproof. Corrugated Transite is also used increasingly for smart interiors . . . the streamlined corrugations and attractive shadow lines that give it such unusual architectural appeal for exteriors offer unlimited interior design possibilities.

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Model MW630-50 (46,000 GVW) above is one of GMC's new ten-wheelers—now available up to 59,000 GVW. It is powered by an improved 225 h.p. gasoline engine—has Hydra-Matic Drive.

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and 9 of them are Hydra-Matic*

Now—here's an entire new line of super ten-wheeler trucks—in the Blue Chip GMC's for the construction field! In 19 extra-rugged models—all the way up to 59,000 GVW—you get:

BLUE CHIP POWER—All 19 have new, power-boosted engines. 4 gasoline and 2 Diesels cover a 155 to 230 h.p. range. And GMC's new 175-h.p. V8 makes its bow in 40,000 GVW models.

BLUE CHIP RUGGEDNESS—Frames are up to 11% stronger. For extra-tough work, stress-relieving reinforcements to the end of the frame are now factory-installed.** Clutches are larger on manual-shift models. Axles are bigger—front and rear on most models.

BLUE CHIP CHOICE OF HYDRA-MATIC MODELS—Hydra-Matic's extra protection is now available up to 46,000 GVW. It ends all the time and money lost to clutch troubles—to shock-loading damage—to engine strain.

BLUE CHIP DRIVER EFFICIENCY—Hydra-Matic makes any driver an expert. All gearshifting duties are handled automatically. Trucks are spared abuse. Fuel savings are impressive. Safety Power Steering** is available on all 19 trucks.

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And wait till you see these Blue Chip GMC's price-tags—till you've had the chance to match them against any competition! You can't afford to buy another truck until you check your GMC dealer!

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*Truck Hydra-Matic standard equipment on many GMC's; optional at extra cost on some others

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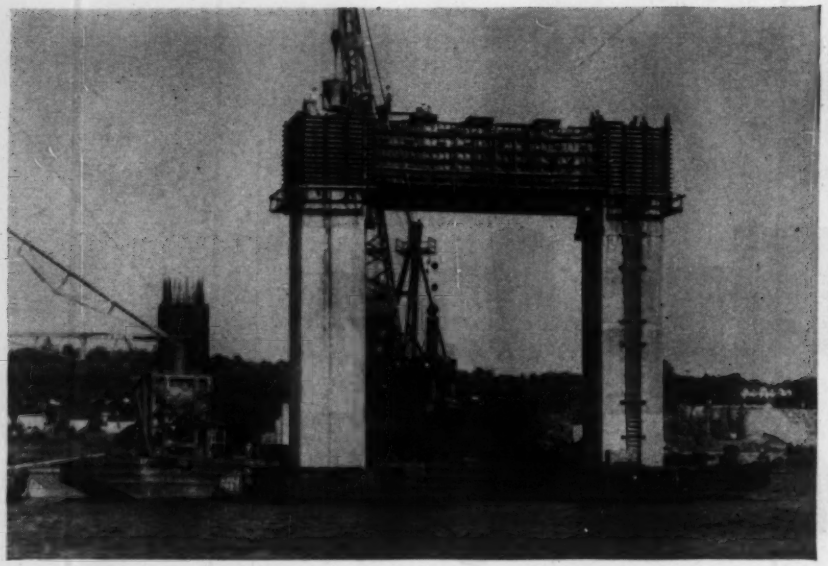
Get a modern truck!

GMC TRUCK & COACH—*A General Motors Division*



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Using varying proportions of Plastiment Concrete Densifier, the engineers were able to keep 7½-foot wall lifts workable enough to permit re-vibration as long as 8 to 10 hours after placement...

Aiming at higher density, bond to steel, elimination of voids and honeycombs, and the reduction in heat of hydration with amplifying reduction in volumetric changes, they selected the admixture on the basis of successful re-vibration performance in concrete tankers, dry cargo ships, and New York's Pier 57, where Plastiment contributed special properties to a project designed for absolute watertightness.

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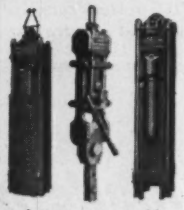

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

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Also builders of coal and ore bridges and unloaders, and specially designed machinery.

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Structural Steel
BRIDGES and BUILDINGS

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Highway Specialist

Herbert Fairbank leaves Bureau of Public Roads

Herbert S. Fairbank has retired as deputy commissioner in charge of research for the Bureau of Public Roads after 45 years of distinguished service. His successor is Edward H. Holmes, who was appointed acting deputy commissioner in March after serving as chief of the bureau's Highway Transportation Division.

A civil engineering graduate of Cornell University, Fairbank has devoted his entire professional career to the Bureau of Public Roads. His extensive writings have touched upon almost every phase of highway planning and construction and his research and recommendations have influenced many important features of highway legislation.

Among his significant achievements was the pioneering in 1935 of the state highway planning surveys for assembling facts and data for improving and financing highway systems, and the studies he directed at the request of Congress on toll and free roads (1937), interregional highways (1944) and highway needs for national defense (1949).

In 1934, Fairbank was a delegate to the International Road Congress in Munich, and in 1949 served as vice chairman of the U. S. delegation to the United Nations Convention on Road and Motor Transport in Geneva, Switzerland. He's currently chairman of the economics and finance department of the Highway Research Board.

In recognition of his work in the highway field, Fairbank received the George S. Bartlett Award in 1947 for outstanding contributions to highway progress, the Department of Com-

merce's Gold Medal Award in 1950 for exceptional service and the Roy W. Crum Award in 1953 for distinguished service in highway research.

His successor, Edward H. Holmes, joined the Bureau of Public Roads in 1928 after graduating from Massachusetts Institute of Technology. Appointed chief of the Highway Transport Research Branch of the bureau in 1945, he's been largely responsible for the initiation and direction of traffic capacity studies. For his outstanding service, Holmes was presented the Department of Commerce's Meritorious Service Award in 1950.

A member of the Institute of Traffic Engineers, Holmes is serving as chairman of the National Joint Committee on Uniform Traffic Control Devices. He's also active in the work of the National Safety Council and is a member of the Department of Traffic and Operations of the Highway Research Board.

Engineer Named Consultant On Bridge Floor Production

G. G. Greulich, engineer and designer of Pittsburgh, Pa., has been retained as a consultant in the production of four-way grid open steel bridge flooring to be manufactured by a new division of Kerrigan Iron Works, Inc., grating manufacturer of Nashville, Tenn. The company has named its new division after Greulich and acquires the right to fabricate and market the bridge floor which Greulich designed.

Chief engineer for the new division is Harvey F. Neel, former bridge engineer with the Pennsylvania Department of Highways. His headquarters will be in Kerrigan's New York office.

Greulich is an architectural engineering graduate of Carnegie Institute of Technology and was associated with Carnegie Illinois Steel Corporation as a consulting engineer before establishing his own practice in 1951.

He holds over 100 patents for various structural and fabricated metal devices and is identified with the pioneering of the "I-Beam Lok" bridge floor system, the "H-Pile" for foundations and the pierced-steel plane landing mats so widely used in the war. For his war-time contributions to the national effort, he received a Defense Department citation for "patriotic civilian service."

Men and Jobs Briefs . . .

• **Associations—Brig. Gen. Stewart E. Reimel** (Ret.) resigns as secretary of Engineers Joint Council and is succeeded by **E. Paul Lange.** He'll continue as secretary of the council's

(Advertisement)

How To Prevent Pipeline Collapse

• A break in the line or a quickly opened valve often releases water at terrific velocity. Internal pressure falls below atmospheric. Thin-walled pipelines collapse! Simplex Air Inlet Valves quickly admit air, prevent a vacuum, protect lines from collapse. They also vent air when lines are being filled to stop binding, increase pumping efficiency. Standard 4″ to 10″ sizes.

Write for Bulletin 1202! **Simplex Valve & Meter Company,** Dept. ENR-5, 7 East Orange Street, Lancaster, Pa.

This complete, instructive collection of information about soil sampling in all subsurface conditions, shallow or deep, with hand or power driven tools, is yours for the asking. Modern sampling techniques are discussed with recommendations as to tools and accessories best suited for fast, accurate, economical sampling.

Use the coupon or write for Bulletin 25.

REMEMBER, Acker also makes a complete line of Diamond and Shot Core Drills, Drilling accessories and equipment.

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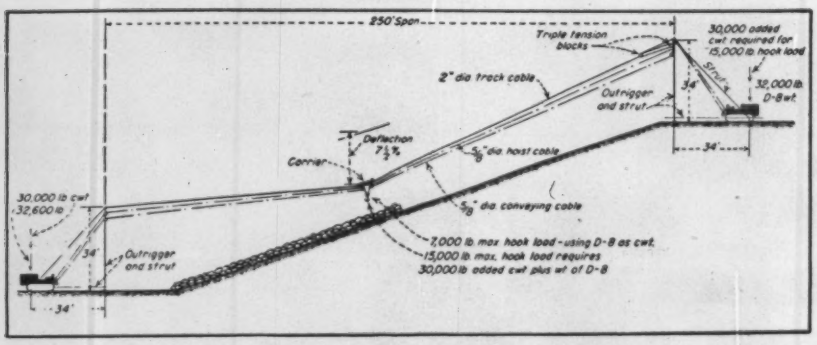
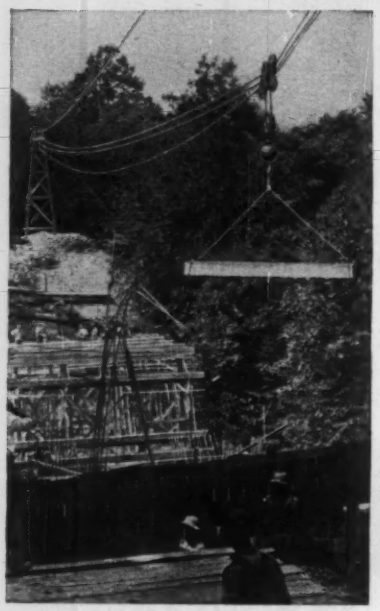


Portable cableway, strung between crawler tractor-mounted booms, served one contractor well in placing a rock mat on the slope of a river bank. Tautline moved with ease, despite extra counterweights needed for heavy hook loads.

You Can Use A Small Cableway*



Materials for highway bridge in Turkey Run Indiana State Park were spotted with a tautline on wooden A-frame towers, 40-ft. high. Cableway, concrete mixer and small sawmill were the only power equipment used.

. . . to meet practically any situation—temporary, semi-permanent, permanent—handling materials in remote areas, dangerous locations, across natural barriers or on construction sites covering many acres.

Highway Bridge in Indiana—All material for this 250-ft. concrete structure was transported by a Sauerman 2-ton tautline. The cableway spanned 460 ft. across a deep ravine.

Kansas River Dam—A power company uses a small Sauerman cableway to transport materials for repair and maintenance. The unit spans the river over the top of the dam. Workmen ride a special cage to work over the dam and raise or lower flash boards used to control height of the reservoir.

Power Plant for a Kentucky Dam—100,000 tons of Government furnished aggregate were delivered to the opposite bank, 1000 ft. away. A belt conveyor, supported by adequate suspension cables, would have been too expensive. Truck delivery would have entailed a long haul and construction of roads. A 4-ton Sauerman cableway was installed. From the loading point 280 ft. above the building site, loading buckets moved by gravity at 1200 fpm. to the batch plant across the river.

More Uses and Engineering Data—Write to Sauerman's engineering dept. Request Catalog G.

* This is a brief adaptation of a 4-page article on small cableways recently published in a leading construction magazine. Reprints are available from Sauerman Bros., Inc.

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MEN AND JOBS

committee on International Relations . . . **Frank B. Bezon,** president of Timber Structures, Inc. of California, is elected president of American Institute of Timber Construction which he helped to organize.

F. M. Gazalet of Vancouver becomes chairman of the Vancouver branch of Engineering Institute of Canada . . . American Society of Landscape Architects forms the Upstate New York Chapter with **Noreda A. Rotunno** of Syracuse as president . . . **V. G. Thomassen** takes over as head of the Engineers Club of Philadelphia.

• **Careers—Thomas H. Cutler,** on leave of absence as engineer-manager of urban development in the Kentucky State Highway Department, goes to Bangkok, Thailand, as consultant in setting up a highway department for a new highway being built by contractors employed by the U. S. Foreign Operations Administration . . . **C. Owen Beckley,** former district engineer, is appointed chief of the planning division of the Pennsylvania Department of Highways . . . **Adolph A. Meyer,** TVA design engineer, leaves for South America to take over as chief of design for the Cauca River Development Corporation in Columbia . . . **W. R. Johnson,** city engineer at Thomasville, N. C., leaves to open his own office as consulting engineer.

• **Business—George Lee Berry,** formerly manager of the Plant and Production Engineering Department of the Ford Motor Company's Steel Division, is named chief engineer of Jones & Laughlin Steel Corp., Pittsburgh . . . **Leon A. Hostetter** opens his own civil engineering office in Sacramento, Calif., specializing in all types of water resources developments. His career includes 12 years with the Corps of Engineers and seven and a half years with International Engineering Co., Inc., San Francisco, as special projects engineer and irrigation consultant.

H. H. Brewster becomes president of the newly formed railroad contracting firm, Brewster-Raymond Co., Inc., Cleveland, Ohio . . . **William H. Hasselbach** is appointed vice president in charge of engineering for Libbey-Owens-Ford Glass Co. . . . **Luther B. Martin** is named associate manager of Esso Research and Engineering Co. . . . **Frederick H. Dill** becomes assistant to the vice president, engineering, research and development, for U. S. Steel's American Bridge Division.

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OBITUARIES

Gilbert F. Mellin, 61, since 1943 assistant chief engineer and appraiser for the California reclamation board at Sacramento, died in Oroville, Calif., Apr. 26. He formerly served for seven years as chief of the land and right of way department for the U. S. Bureau of Reclamation. At one time he was employed by the California division of highways.

Wilbur Haskyn, 70, former engineer in Montana, Idaho and Utah, died April 26 in Helena, Mont. He received his civil engineering degree from Northwest College. During his career he was a U. S. government road construction survey engineer in Utah and Yellowstone Park; survey engineer for Canadian Pacific and Northern Pacific railroads; resident engineer for the Milwaukee Railroad in Montana and Idaho.

Mason H. Roberts, 66, chief of the utility section, division of engineering, in the Corps of Engineers district office in Sacramento, Calif., died May 2. Roberts, a civil engineering graduate of the University of Oregon, had been employed by the corps for 23 years and in the Sacramento office for 10 years.

Jay C. Merrell, 58, civil engineer with the Ohio State Highway Department, Bureau of Bridges, died May 1 in Columbus, O. Early in his career he taught engineering at Ohio State University and at Washington University in St. Louis. He received his engineering degree from Ohio State University in 1919.

George F. Marlowe, 78, retired architect and author whose professional career began with civil engineering at Worcester, Mass., died at Framingham, Mass., April 30. At one time he served with the Boston metropolitan water supply development in connection with Wachusett Reservoir project at Clinton, Mass.

John W. Tilsy, 56, head of the soil conservation service in Cumberland County, Fayetteville, N. C. for the past 10 years, died April 26. He formerly was a colonel in the Army Corps of Engineers.

Michael D. Pobor, 34, engineer for the California state division of highways, was killed April 30 in an automobile accident. He was serving in the division's bridge and materials research department in Sacramento.

Mayari R makes it lighter... stronger... longer lasting

How they built a stronger roof with fewer purlins

The roof on this new warehouse had to be capable of supporting heavier-than-usual loads. The builders, Soule Steel Company, San Francisco, looked for a way to "build in" the necessary strength without having to close up the purlin spacing.

They hit on the idea of using Mayari R high-strength, low-alloy steel for the purlins. They knew that, with its yield point of 50,000 psi, Mayari R would give them about 50 pct greater strength than carbon steel of equal thickness. So they cold-formed 14-gage sheets of Mayari R into Z-sections 7¾ in. deep. These extra-strong zees were then used to give ample support for the roofing when placed on 3 ft 6 in. centers.

We cite this example not so much to promote Mayari R for purlins, as to point up another in the great variety of ways in which Mayari R's superior strength is helping to solve structural problems. On any job where strength or weight-saving are critical factors, you'll do well to consider this versatile steel.

There are other advantages, too: weldability, formability, excellent resistance to corrosion, impact, abrasion. Our new Catalog 353 has all the details, plus dozens of interesting application pictures. You should have a copy on hand, and you can get one promptly by phoning or writing the nearest Bethlehem sales office.

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The motor is sealed in the vibrating head, so there's no flexible shaft to get out of whack; no oiling or greasing problems; no kinking troubles.

No field maintenance is necessary: when motor head needs attention, snap it off and snap on a spare.

The vibration actually penetrates farther and leaves fewer voids in the concrete than old-style vibrators.

The price is *low*. The design has eliminated so much cost, and no special power source is required, but the big saving comes in use. Write for folder or ask your Master distributor for a free demonstration. You'll see exactly how the Master "1-Man" can cut your vibrating costs *at least* 50%.

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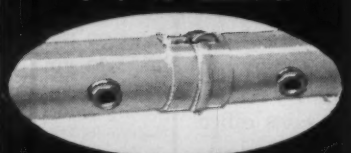

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BOOKS

Collective Bargaining As It Affects Engineers

A PROFESSIONAL LOOK AT THE ENGINEER IN INDUSTRY—Prepared by the Engineer-in-Industry Committee of the National Society of Professional Engineers. 121 pp. Obtainable from the society at 1121 Fifteenth St., N. W., Washington, D. C. $3.00.

This large pamphlet is given over chiefly to a review of collective-bargaining developments as they relate to engineering employees since the passage of the Wagner Act in 1935. Thus it brings up to date information originally supplied to the engineering profession in "Technologists Stake in the Wagner Act," published by the American Association of Engineers in 1944.

Much has been learned since 1944 about the actual operations of collective bargaining groups set up by engineers and about the "non-bargaining" or "sounding-board" groups that have been set up in an attempt to find a satisfactory substitute for an out-and-out union. These developments are well summarized.

Included is a listing of unaffiliated unions of engineers, with the approximate number of men they represent , also a list of the unions now associated in the Engineers and Scientists of America. There is no similar listing of the non-bargaining groups.

The latter part of the pamphlet is given over to a discussion of what industries can do to keep their engineers satisfied and so uninterested in unions. In a concise form it brings together findings of the two earlier NSPE studies, "How to Improve Engineering-Management Communications" and "How to Improve the Utilization of Engineering Manpower." Any industry that followed all the recommendations of this latest report would never have to worry about the unionization of its engineers, but the chance of that happening appears remote.

Miscellaneous Notes

• **A supplement** to the "Symposium on Lateral Load Tests on Piles" (ASTM Special Technical Publication No. 154) has just been issued by the American Society for Testing Materials (116 Race St., Philadelphia 3, Pa.). It contains papers presented at the 1954 meeting of the society. The original publication contained papers at the symposium held at the 1953 meeting. This supplement

(ASTM Special Technical Publication No. 154A) costs $1.00. If both publications are ordered the cost is $2.75.

• **Nails have much greater** holding power than staples, according to a report, "Effectiveness of Nails Versus Staples for Fastening Insulating Sheathing," by Prof. E. George Stern, Wood Research Laboratory, Virginia Polytechnic Institute, Blacksburg, Va. Plain-shank nails were found to have 1.9 to 5.9 times the holding power of staples; annularly threaded nails to have 2.2 to 12.5 times the holding power and helically threaded nails 3.9 to 14.7 times the holding power. The investigation was sponsored by Independent Nail & Packing Co., Bridgewater, Mass.

• **Proceedings** of a conference on thin concrete shells held June 21 to 23, 1954, at Massachusetts Institute of Technology have been published in a 134-page booklet. Included are 21 papers and discussions, presenting structural theory and construction techniques. Copies may be obtained at $5 each from Miss Jean E. Murray, Rm 1-250, MIT, Cambridge 39, Mass.

New Engineering Books

IRRIGATION AND HYDRAULIC DESIGN—Volume I, General Principles of Hydraulic Design. By Serge Leliavsky. 492 pp. Chapman & Hall, 37 Essex St., London, W. C. 2. 126 shillings. Obtainable through the British Book Center, 122 E. 55th St., New York 22, N. Y. $27.70

THE HOPPER DREDGE, Its History, Development and Operation—Prepared by the Office of the Chief of Engineers, U. S. Army. Frederick S. Scheffauer, Editor in Chief. 399 pp. Obtainable from the Superintendent of Documents, Washington 25, D. C. $4.00

ASTM STANDARDS—1954 Supplements, Including Tentatives: Part 1, Ferrous Metals; Part 2, Non-Ferrous Metals; Part 3, Cement, Ceramics, Thermal Insulation, Road Materials, Waterproofing, Soils; Part 4, Paint, Naval Stores, Wood, Cellulose, Wax Polishes, Sandwich and Building Construction, Fire Tests. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $3.50 for each part.

ASTM STANDARDS—Paint, Varnish, Lacquer and Related Products: Specifications, Methods of Testing and Definitions of Terms. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $6.00

THE GREAT RECONNAISSANCE—By Edward S. Wallace, 277 pp. Little, Brown & Co., 34 Beacon St., Boston 6, Mass. $5.00. The story of the men who explored, surveyed and mapped the new American boundary with Mexico after 1848 and of the men who opened up that region.

(Continued on page 80)

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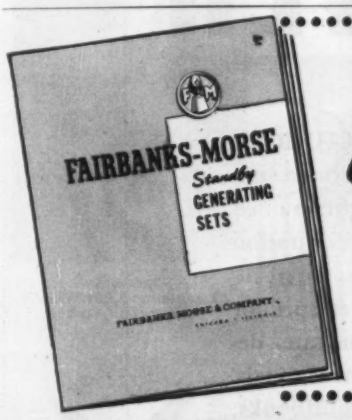

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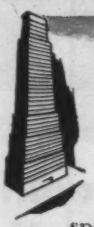

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BOOKS

ELEMENTARY PLANE SURVEYING—Third Edition. By Raymond E. Davis, 507 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $5.50

WHAT MAKES AN EXECUTIVE?—Report of a Round Table on Executive Potential and Performance. 179 pp. Columbia University Press, Morningside Heights, New York 27, N. Y. $3.50

MATERIALS OF CONSTRUCTION — Sixth Edition. By Mills, Hayward & Rader, 641 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $7.50

NOMOGRAPHY AND EMPIRICAL EQUATIONS By Dales S. Davis, 236 pp. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. $6.75

Reports and Pamphlets

SOUND INSULATION OF WALL AND FLOOR CONSTRUCTIONS—BMS Report 144, National Bureau of Standards. Superintendent of Documents, Washington 25, D. C. $0.40

HUMAN FACTORS IN HIGHWAY TRANSPORT SAFETY—By Ross A. McFarland and Alfred L. Moseley, Harvard School of Public Health, 695 Huntington Ave., Boston, Mass.

HIGHWAY RESEARCH BOARD—Bulletin 95, Laboratory Analysis of Soils, Grain Size and Liquid Limit ($0.60); Bulletin 96, Load-Carrying Capacity of Frost-Affected Roads ($0.45); Bulletin 98, Stabilization of Soils ($0.75); Bulletin 99, Parking Requirements in Zoning Ordinances ($0.75). Obtainable from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. at prices indicated.

EQUAL CHARGES FOR HIGHWAY USE—Iowa Free Roads Association, 4029 Hubbell Blvd., Des Moines, Iowa.

THE ANALYSIS OF THE STRUCTURAL BEHAVIOUR OF GUYED ANTENNA MASTS UNDER WIND AND ICE LOADING: Part 1: Structural Analysis—Report No. MM-238, Division of Mechanical Engineering, National Research Council of Canada, Ottawa, Ont.

EQUALIZING RESERVOIR DAMS AND THE FEEDER CANAL, Columbia Basin Project, Constructed 1946-1951. U. S. Bureau of Reclamation, Denver, Col.

THE DEVELOPMENT OF CAPE TOWN AND ADJACENT AREAS—By S. S. Morris, City Engineer, City Hall, Cape Town, South Africa.

THE RELATIONSHIP BETWEEN GOOD TRAFFIC LAWS AND SAFE MOTORING—A Report for the Indiana Legislative Study Commission on Traffic Safety by the Automotive Safety Foundation, 200 Ring Bldg., Washington 6, D. C.

COMPARATIVE COSTS OF WALLS, Partitions, Roofs for Schol Buildings—National Lumber Manufacturers Assn., Washington, D. C.

MODEL STUDIES OF INLET DESIGNS FOR PIPE CULVERTS ON STEEP GRADES—Bulletin No. 35. Engineering Experiment Station, Oregon State College Corvallis, Ore.

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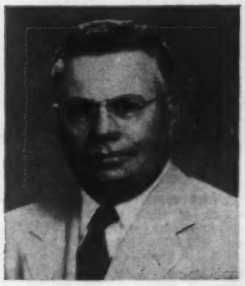
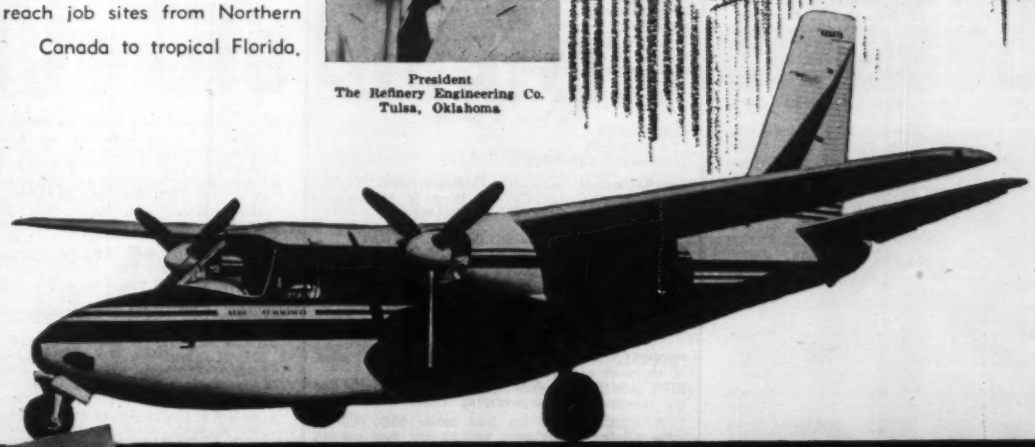


President
The Refinery Engineering Co.
Tulsa, Oklahoma



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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Bangor**—HEADQUARTERS—BA 5/24—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., wing headquarters bldg., air base group headquarters, telephone exchange bldg., base technical laboratory, Dow Air Force Base, ENG-19-016-55-120. $400,000-$500,000. Plans deposit $10. Stevens & Saunders, 187 Middle St., Portland, and Tracy & Hildreth, 4 Davis Court, Nashua, N. H., archts.

Massachusetts—PIER, etc.—BA 5/24—Commonwealth of Mass., Dpt. P. Wks., 100 Nahsua St., Boston, constr. concrete pier, pier shed, dredging Provincetown Harbor, Provincetown. $570,000. Plans deposit $50, refundable. CD 10/20.

† **Mass., Bedford**—TRAINING BLDG.—BA 5/25—U. S. Eng., 857 Commonwealth Ave., Boston, synthetic training and flight simulator training bldg., AIO warehouse, shop, Hanscom Air Force Base, ENG-19-016-55-122. $200,000-$300,000. Plans deposit $10, refundable. C. J. Kray, 294 Washington St., Boston, engr.

MASSACHUSETTS — BA 6/1 — Massachusetts Turnpike Auth., office of Secretary-Treasurer, 80 Boylston St., Boston, Zone 16,

Lee and Becket—Contr. No. 51-021, hy. and bridge constr. Plans deposit $70, not refundable. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, Zone 16, general consult. engrs.; adv. ENR 5/19. CD 8/11.

BIDS ASKED—BUILDINGS

Conn., Winsted—HOSPITAL—BA 5/25—Litchfield County Hospital, Spencer, hospital addn. and extensive remodeling, Spencer St. $800,000. Extended date. Sherwood, Mills & Smith, 65 Broad St., Stamford, archts. CD 4/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Edward R. Marden Corp.**, 233 Harvard St., Brookline, Mass. LB **$154,000**, est. $200,000. tanker squadron headquarters, operatoins bldg., Dow Air Force Base, ENG-19-016-55-114, BANGOR, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids May 3. CD 4/18.

▲ **NEW HAMPSHIRE**—State Dpt. P. Wks. & Hys., Concord,

Manchester Sand, Gravel & Cement Co., P. O. Box 536, Manchester, N. H., LB **$1,053,946**, 1.32 mi. Class C2 road mix hy., three bridges and moving two buildings, Concord, Merrimack Co. Bids May 5. CD 4/25.

▲ **Joseph A. Bass Co.**, 333 Sexton Bldg., Minneapolis, Minn., CA **$1,245,300**, est. $1,000,000-$1,250,000. facilities, ENG-19-016-55-5, NORTH CONCORD, VT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 26. CD 5/2, under LB.

▲ **MASSACHUSETTS** — Massachusetts Turnpike Auth., 80 Boylston St., Boston,

B. Perini & Sons, Inc., 73 Montwait Ave., Framingham, Mass. CA **$10,317,533**, est. $10,250,000. Contr. 51-010, hy. and bridge constr., West Stockbridge-Stockbridge and Lee. CD 4/5, under LB.

Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass., received no bids May 3, furnishing, installing 2 lane toll-collecting system, Salisbury Beach, Salisbury, MASSACHUSETTS. Est. **$6,000**. CD 4/20.

A. Baruffaldi Co., 279 Alewife Brook Parkway, Somerville, Mass. LB **$164,895**, est. $165,000. Contr. 26 sewers, force main, WEYMOUTH, MASS. Town, Bd. Sewer Comrs., 402 Essex St., Weymouth, Mass. Bids May 2. CD 4/18.

Richard White & Sons, Inc., 70 Crescent St., Newton, Mass. LB **$119,497**, Alt. A, **$109,097**, Alt. B, est. $120,000. pumping station, sewer constr., appurtenant work, East Weymouth (Weymouth, Mass.).

† **Frouge Constr. Co., Inc.**, 140 North Ave., Bridgeport, Conn., CA, **$847,675**, est. $900,000-$1,000,000. Special AAA Facilities (Fairfield) Bridgeport Area, CONNECTICUT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 12. CD 4/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Walter P. LaCivita, 334 Washington St., East Walpole, Mass. Separate Contracts. **$350,000**. 27 RESIDENCES, off South St., PLAINVILLE, MASS. Lester N. Lechter, 739 Boylston St., Boston, Mass., designer.

Donatelli Building Co., Inc., 12 Silver Spring St., Providence, R. I., CA **$355,950**. Hampden Meadows Elementary SCHOOL, BARRINGTON, R. I. Town, Supt. Schools, Maple Ave., Barrington, R. I. Bids Apr. 20. CD 4/22, under LB.

▲ **F. D. Rich Co., Inc.**, 322 Main St., Stamford, Conn. CA **$2,043,000**. HOSPITAL addn., STAMFORD, CONN. St. Joseph Hospital, 128 Strawberry Hill Ave., Stamford, Conn. Bids Apr. 26. CD 5/3, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **N. Y., Brooklyn**—CLASSROOMS—BA 5/25—U.S. Prop. & Fiscal Officer for New York, New York State Arsenal, 201 64 St., Zone 20, constr., heating and electrical work, maintenance training classrooms, New York Air National Guard, Floyd Bennett Field, No. NG-30-192-55-39.

Md., Towson—BA 5/27—Comrs. Baltimore Co., Court House, sewage pumping station, force main, gravity main, North Point Section. Plans deposit $5. Chas. B. Wheeler, c/o owner, ch. engr. CD 4/14/53.

New York—GAS STATIONS, RESTAURANTS—BA 6/2—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Type "B" gas station and restaurant at East Schuyler; Type "B" gas station and restaurant at Coxsackie; Type "B" gas station and restaurant at South Amsterdam. Plans deposit $50.

New York—GAS STATION, etc.—BA 6/2—Bureau Contracts & Accounts, The Governor E. Smith State Office Bldg., Albany, Type "A" gas station and restaurant and Type "CM" gas station and restaurant and pedestrian bridge for New York State Thruway Auth. at Indian Castle, Herkimer Co. Extended date. CD 4/13.

N. Y., Willard—SPRINKLER SYS.—BA 6/2—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, new sprinkler sys., Willard State Hospital. Plans deposit $30.

BIDS ASKED—BUILDINGS

N. Y., East Rockaway —CHURCH, etc.—BA 5/26—St. Raymond's Church, Carman Ave., church and rectory Atlantic Ave., between Roosevelt and Carman Ave. $700,000. Henry V. Murphy, 1 Hanson Pl., Brooklyn, Zone 17, archt.

▲ **N. J., River Edge**—SCHOOL—BA 5/26—Bd. Educ., 401 Bogert Rd., 2 story Junior High School, $1,000,000. Gustave Pfost, River Edge, N.J., archt. CD 11/11.

N. Y., New York—HOUSING—BA 6/7—New York City Housing Auth., 299 Broadway, Zone 7, (1) foundations and general constr. (2) heatings and ventilating (3) electrical work (4) plumbing; furnish and erect elevators for Jefferson Houses, (Proj. NY-5-16) Sect. II, incl. Buildings Nos. 7 to 10 (inclusive) in area bounded by E. 113 St., 1st Ave., E. 112 St. and 2nd Ave., Manhattan Boro. Plans deposit $75, $25 for elevators. CD 8/22/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

N. Y.—Tufano Contr. Corp., 32-17 Lawrence St., Flushing, N. Y., LB **$323,797**, est. $403,000. 1.91 mi. Mattituck-Greenport, Pts. 1 & 3, S.H. 8229, FARC. 55-25, Suffolk Co.; LB **$324,018**, est. $397,000, 2.26 mi. Bridgehampton-Devon, Pt. 2, S.H. 1524. FARC. 55-27, Suffolk Co.;

N. Y.—Zara Contg. Co., Inc., Engel St., Hicksville, N. Y., LB **$94,405**, est. $103,000. 0.28 mi. Bayshore-Brookhaven Town Line, S.H. 5301. FARC. 55-26, Suffolk Co.;

N. Y.—Ador & Booth, Inc., 1130 Water St., Watertown, N. Y. LB **$306,667**, est. $416,000, 3.09 mi. Richville-Dekalb, Pt. 2, SH 8236. FARC. 55-14, St. Lawrence Co.;

N. Y.—Hornell Countr. Corp., Hornell, N. Y., LB **$132,-104**, est. $144,000. 1.25 Mi. Horseheads-Montour Falls, SH 5208, Montour Falls, S.H. 5160, FARC. 55-12, Schuyler Co.;

N. Y.—Lizza & Sons, Inc., 21 Orchard St., Oyster Bay, N. Y., LB **$461,769**, est. $658,000. 6.13 mi. Port Jefferson-Riverhead, Pt. 1, SH 8094, Port Jefferson-Riverhead, Pt. 2B, SH 8111, FARC. 55-24, Suffolk Co.;

N. Y.—Collins Bros., Waterford Rd., Mechanicville, N. Y. LB **$264,037**, est. $378,000, New York State Thruway-Mohawk Sect. Sub. 15 (South Amsterdam Gas Station-Restaurant site) Type B, M.T. 55-6, Montgomery Co.; LB **$238,137**, est. $271,000, 2.71 mi. Wait Corners-Lapes Corners, S.H. 1523, Lapes Corners-Clifton Park, SH 8137, FARC. 55-8, Saratoga Co.;

N. Y.—Binghampton Constr. Co., Inc., Marine Bldg., Binghampton, N. Y., LB **$504,970**, est. $623,000, 11.96 mi. Barker, SH 375; Chenango Forks-North Fenton, SH 1241; Port Crane-North Fenton, SH 963; North Fenton-Belden Pt. 1, SH 9036, North Fenton-Belden Pt. 2, SH 8427. FARC 55-16, Broome and Chenango Counties;

N. Y.—J. H. Bell, Poland, N. Y. LB **$144,367**, est. $170,000. New York State Thruway-Mohawk Sect.-Sub. 10A (East Schuyler Gas Station-Restaurant site) Type B, M. T. 55-4, Herkimer Co.;

N. Y.—B. W. Husted & Son, Inc., Seneca Turnpike, New Hartford, N. Y., LB **$339,977**, est. $399,000, 5.79 mi. Fort Plain-Canajoharie-Canajoharie-Fultonville, Pt. 1, S.H. 8348, Canajoharie-Fultonville, Pt. 2, SH 8371, Canajoharie Village; Erie Blvd. and Main St. Pt. 2, SH 1866A, Canajoharie Village, Erie Blvd. and Main St., S.H. 1866, R.C. 55-18, FARC. 55-19, Montgomery Co.;

N. Y.—Dalrymple Gravel & Contr. Co., Inc., 105 E. Chemung Pl., Elmira, N. Y., LB **$598,851**, est. $722,-000. 6.25 mi. Big Flats-Fitch Bridge, SH 8411, Fitch Bridge-Elmira, SH 946, FARC. 55-11, Chemung Co.;

N. Y.—Peckham Road Corp., 47 Mamaroneck Ave., White Plains, N.Y., LB **$146,373**, est. $167,000, New York State Thruway-Catskill Sect.-Sub. 6 (Coxsackie Gas Station-Restaurant site Type B, C.T. 55-6, Greene Co.;

N. Y.—County Asphalt, Inc., 129 Main St., Tarrytown, N.Y., LB **$325,729**., est. $421,000. 4.01 mi. Peekskill-Fishkill, Pts. 1 and 2, S.H. 5147-5387, FARC. 55-22 Putnam and Westchester Counties. Bids May 5. CD 4/11.

† **Allis-Chalmers Mfg. Co.**, 50 Church St., New York, N. Y. LB **$608,750**, furnish, del. hydraulic turbine governors, Spec. No. PA-4-15002, St. Lawrence Contr. No. P15, NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids May 6. CD 4/15.

B. Turecamo Constr. Co., Inc., Belt Parkway, foot of 24 St., Brooklyn, N.Y., LB **$134,832**, for No. 1, curbing, flagging, asph. paving, Avenue V, Gerritsen Ave. to Stuart St.; No. 3, asph. repaving Argyle Rd. from Beverley to Cortelyou Rds; No. 7, asph. resurf. by heater method Avenue H, Flatbush Ave. to E. 35 St.; No. 8, asph. resurf. by heater method 2nd St., 4 to 5 Aves.; Bay 23 St., Bath to Crospey Aves., Bedford Ave., Atlantic Ave. to Sterling Pl., Parkville Ave., McDonald Ave. to 3 St.,; 11 Ave., 79 to 82 Sts. BROOKLYN, N.Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N.Y. Bids May 2. CD 4/25.

† **L. I. Waldman & Co., Inc.**, 40-01 29 St., Long Island City, N.Y., LB **$101,275**, rehabilitation electrical distr. sys., (FY 1955), Mitchel Air Force Base. ENG-30-075-55-185, MITCHEL FIELD, N.Y. U.S. Eng., 111 E. 16 St., New York 3, N.Y. Bids May 5. CD 4/15.

Arbee Constr. Co., 2266 59 St., Brooklyn 4, N. Y. LB (A) $209,193; LB (B) $215,239, playground, adjacent to P. S. 156, north of W. 155 St. between Harlem River Dr., and 8th Ave., Manhattan Boro, Contr. M-216-154, NEW YORK, N. Y. Comr. Parks, Dpt.

(Continued on page 84)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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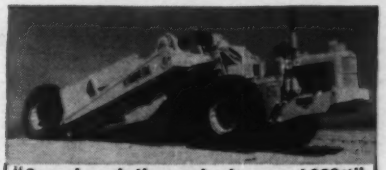
United States Rubber Company 4-year project pays off—
construction men report they're well ahead with U. S. Royal!



"On rock work, tire service increased 300%"
says H. Earl Parker, Marysville, Calif.

"On tough jobs like Pine Flat Dam, we've had a tremendous increase in tire service since we switched to U. S. Royal Nylon Con-Trak-Tors. This has meant a substantial decrease in downtime on heavy equipment and a real economy for us in operating costs."

Tire Life Greatly Increased!

The U. S. Royal Con-Trak-Tor, an important result of U. S. Royal's 4-Year Truck Tire Project, is increasing service life and reducing equipment downtime for leading construction men like Mr. Parker.

Good reasons, too! The Con-Trak-Tor's *Nylon cord carcass* stands up to vicious shocks, fights off rocks and snags. It has *triple impact protection*—extra rubber between plies, double shock-pads under the tread, extra-tough construction at the crown. Its *full lug traction* pulls right through toughest going, just *won't* bog down.

Why not let the U. S. Royal Con-Trak-Tor increase *your* tire service, reduce *your* downtime, lower *your* operating costs? Your U. S. Royal Dealer has this great tire in your size. Have him put it on your wheels—and prove to yourself why construction men like Mr. Parker report they're *well ahead* with U. S. Royal!

U.S. ROYAL NYLON CON-TRAK-TOR FULL LUG

(Continued from page 82)

Parks, Arsenal Bldg. Central Park, 64 St. and 5 Ave., New York 21, N. Y. Bids May 5. CD 4/26.

† **Theodore Kaish,** 232 Franklin Ave., Brooklyn 5, N. Y. LB $240,600, electrical work for heating tunnels and connections, Creedmoor State Hospital, QUEENS VILLAGE, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids May 5. CD 4/13.

† **Matthew L. Carroll, Inc.,** 101 Park Ave., New York 17, N.Y. LB $596,311, ground electric storage shops, AMC FY 53, Griffiss Air Force Base, ROME, N.Y. U.S. Eng., 111 E. 16 St., New York 3, N.Y. Bids May 5. CD 2/17.

† **R. M. Duval Constr. Co., Inc.,** 224 W. 4 St., New York 14, N. Y., LB $502,800. ammunition testing facilities, Picatinny Arsenal, DOVER, N. J. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids May 4. CD 3/23.

Kusar Brothers, Montvale, N. J., LB $225,540 Contract A, bascule type gates for Boonton Dam, Rockaway River, JERSEY CITY, N. J. Bd. Comrs., Assembly Chamber, City Hall, Jersey City, N. J. Bids May 3. CD 3/22.

† **Piracci Constr. Co.,** 2552 Woodbrook Ave., Baltimore 17, Md. LB $664,576. Special AAA facilities, Site BA 43-CL launching area, control area, 3 underground missile storage bldgs., 2 barracks, admin. bldg., near Jacobsonville, Anne Arundel Co., ENG-18-020-55-45, MARYLAND. U. S. Eng., P. O. Box 1715, Baltimore 3, Md. Bids May 3. CD 4/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Shore Gardens, Inc., 26 Court St., Brooklyn 2, N.Y. Owner Builds. $850,000. 6 story APARTMENT, 2840-2874 Shore Parkway, BROOKLYN, N.Y. CD 3/18.

▲ **Hilaire Estates Homes,** c/o Stanley Klein, archt., 89-31, 161 St., Jamaica, N.Y. Owner Builds. $3,500,000. 237 HOUSES, Deer Park Ave. and Winnecomac Aves., DEER PARK, N.Y.

▲ **Lenard Homes,** c/o John Burton, archt., 163-8 Jamaica Ave., Jamaica, N.Y. Owner Builds. $1,700,000. 100 HOUSES, 50-acre tract, Larfield and Clay Pitts Rds., EAST NORTHPORT, N.Y.

Alan Homes, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N.Y. Owner Builds. $700,000. 64 HOUSES, Carman and Great Neck Rds., FARMINGDALE, N.Y.

Martin W. Juster, c/o Herbert Lilien, archt., 201 W. 72 St., New York 23, N.Y. Owner Builds. $750,000. APARTMENT, Booth St. between 67 Rd. and 67 Dr., FOREST HILLS, N.Y. CD 3/7.

Horizon Homes, c/o G.M.P. Realty Corp., 2398 Hempstead Turnpike, East Meadow, N.Y. Owner Builds. $750,000. Second Sect., 50 HOUSES, Adams and Nassau Sts., FREEPORT, N.Y.

▲ **George A. Fuller Co.,** 597 Madison Ave., New York 22, N. Y., CA Est.. $23,000,000. Roosevelt Field SHOPPING CENTER, HEMPSTEAD, N. Y. Webb & Knapp, Inc., 270 Park Ave., New York 17, N. Y. CD 3/9/54.

▲ **Robin Hood Park Homes,** c/o Alwin Cassens, Jr, archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. $1,350,000. 85 HOUSES, tract Newbridge Rd. and Milburn St., HICKSVILLE, N. Y.

▲ **Pond Ridge Knolls Homes,** c/o Klein & Parker Realty Co., Inc., 1391 Northern Blvd., Roslyn, N. Y. Owner Builds. $1,300,000. 100 HOUSES, Melville Rd. and Margarus St., HUNTINGTON, N. Y.

Litt, c/o H. Herbert Lilien, archt., 201 W. 72 St., New York 23, N. Y. Owner Builds. $800,000 garden APARTMENTS, Broadway and Sunnyside Lane, IRVINGTON, N. Y.

Stanwich Constr. Co., c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y. Owner Builds. $617,000. 47 HOUSES, Melbourne Ave., Granett Rd. and Main St., KEW GARDENS, N. Y.

▲ **H. R. H. Constr. Co.,** 16 W. 46 St., New York, N. Y. CA Est. $1,500,000. SCHOOL BLDGS., W. 12th St., NEW YORK, N. Y. New School for Social Research, 66 W. 12 St., New York, N. Y. Mayer & Whittlesey, 31 Union Square, New York, N. Y., archts.

▲ **136 S. 55 St., Inc.,** 36 W. 44 St., New York 18, N. Y. Owner Builds. $1,600,000. 19 story APARTMENT, 136 E. 55 St., NEW YORK, N. Y. CD 3/8.

▲ **Psaty & Fuhrman, Inc.,** 369 Lexington Ave., New York 17, N. Y., LB $3,153,000, general constr., new General Care HOSPITAL BLDG. at Harlem Hospital, Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids May 4.
S & M Plumbing Co., 601 W. 26 St., New York 1, N. Y. LB $361,400, heating, LB $434,000, plumbing (New York Hospital).
Dropkin Bros., Inc., 205 Bedford Ave., Brooklyn 11, N. Y., LB $534,800, electrical work (New York Hospital). CD 4/26.

Turner Constr. Co., 420 Lexington Ave., New York 17, N. Y. CA $600,000. OFFICE alterations at site. NEW YORK, N. Y. Bankers Trust Co., 14-16 Wall St., New York 5, N. Y. CD 3/28.

▲ **Old Oaks Homes,** c/o Kern Realty Co., 124-26 Queens Blvd., Kew Gardens, N. Y. Owner Builds. $1,000,000. 67 HOUSES, tract on Hillside Lane south, north of Jericho Turnpike, SYOSSET, N. Y.

M. E. Maloney & Co., 129 Halstead Ave., Mamaroneck, N. Y. CA Est. $500,000. Powells Lane Elementary SCHOOL, WESTBURY, N. Y. Bd. Educ., Westbury, N. Y. Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., archts. CD 3/26/54.

Bellwest Realty Corp., c/o Lawrence Rothman, archt., 147 E. 125 St., New York 35, N. Y. Owner Builds. $500,000. 6 story APARTMENT, 11 Bronx River Rd., YONKERS, N. Y. CD 12/1.

Elmbrook Club Estates, c/o Pasford Ltd., 37-01 Broadway, Fairlawn, N. J. Owner Builds. $400,000. 20 HOUSES, on tract on Broad St., BLOOMFIELD, N. J.

▲ **Daniel J. Cronin, Inc.,** 717 S. Orange Ave., Newark 6, N. J., CA $1,433,074, GERIATRICS BLDG., Essex County Overlook Hospital, CEDAR GROVE, N. J. Bd. Freeholders Essex Co., Hall of Records, Newark, N. J. Bids Apr. 20. CD 4/7.

▲ **Crest Hill Manor Homes,** c/o Leo Feinen, archt., 320 Lincoln Ave., Hasbrouck Heights, N. J. Owner Builds, $1,000,000, 46 HOUSES on tract on Radburn Road, near Fairlawn Ave., FAIRLAWN, N. J.

Palisade Terrace Garden Apartments, Inc., c/o William I. Hohauser, archt., 151 W. 51 St., New York 19, N. Y. Owner Builds. $800,000. 100-family Garden APARTMENT, Palisades near Palisades Ave., FORT LEE, N. J.

▲ **Muss Brothers & Sons,** 1192 Lower Ferry Rd., Trenton, N. J. Owner Builds, $22,000,000, 2,000 HOUSES on 1,300 acre tract on Route 70 to be called "Hampton Lakes", VINCENTOWN, N. J.

† **Libertini Constr. Co., Inc.,** 2202 Maryland Ave., Baltimore 18, Md. LB $178,350. addnl. PHYSICAL EDUCATIONAL FACILITIES, back fill and piling, Naval Academy, NOY 84703, Spec. 44169, ANNAPOLIS, MD. Bureau Yards & Docks, Annapolis, Md. Bids May 3. CD 4/13.

▲ **John McShain, Inc.,** 3 W. Franklin St., Baltimore 1, CA $1,900,750, est. $1,750,000. masonry Montebello Chronic Disease HOSPITAL, Herring Run and Hartford Rd., BALTIMORE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. CD 4/14, under LB.

Fabian Constr. Co., 3034 Spaulding Ave., Baltimore 15, Md. Separate Contracts. $690,000. 69 brick DWELLINGS, St. Claire Lane, North Point Village, North Point Section, BALTIMORE, MD.

Laird, Rock & Small, 1208 Windy Gate Rd., Towson, Md. Separate Contracts. $450,000. 18 stone DWELLINGS, Hampton Lane and Echo Court, Hampton Village, BALTIMORE, MD.

Ajax Constr. Co., 1107 19 St. N. W., Wash., D. C. CA Est. $400,000. STORE, 7201 Wisconsin Ave., BETHESDA, MD. Woodward & Lothrop Department Store, 11 and G Sts. N. W., Wash., D. C. Arthur P. Starr, 1223 Connecticut Ave. N. W., Wash., D. C., archt. Awarded May 2.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Fort Belvoir**—MECHANICAL VENTILATION—BA 5/24—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., mechanical ventilation, Specker Field House, ENG-49-080-55-77-(67). CD 7/17/52, under Public Buildings.

† **Va., Dahlgren**—LANDING RAMP—BA 5/25—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., landing ramp for LCU and LCM, Naval Proving Ground, NOY 86405. Plans deposit $10.

† **Ky., Fort Knox**—COMBAT FIRING RANGE—BA 5/26—U. S. Eng., P.O. Box 59, Louisville, Zone 1, combat firing range and moving tank range, ENG-15-029-55-78. CD 4/14, under Public Buildings.

† **La., Shreveport**—FIRE PROTECTION SYSTEM—BA About 6/8—U. S. Eng., P.O. Box 867, Little Rock, Ark., Job No. Louisiana OP-(Shell) 55-PP-ORD fire protection sys. for Shell mfg. plant, Louisiana Ordnance plant, ENG-03-050-55-116.

† **La., Lake Charles**—SQUADRON OPERATIONS BLDG.—BA 6/14—U. S. Eng., P. O. Box 1229, Galveston, Tex., squadron operations bldgs., Lake Charles Air Force Base, ENG-41-243-55-67, $500,000-$1,000,000.

BIDS ASKED—BUILDINGS

▲ **Ky., Louisville**—LIBRARY—BA 6/2—University of Louisville, 2301 S. Third St., Speed Library, $1,280,000. Nevin & Morgan, Starks Bldg., archts: Jansen & Rogan, 500 Fifth Ave., New York, N. Y., mech. engrs. CD 11/16/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Wright Contg. Co.,** 504 25th Ave., Columbus, Ga. CA $3,497,704, runway, taxiway and apron paving, Seymour Johnson Air Force Base, ENG-31-075-55-51, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Apr. 26. CD 5/6, under LB.

† **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, N. C., CA $813,428, officers quarters, Charleston Air Force Base, North Charleston, No. 38-081-55-65, CHARLESTON, S. C. U. S. Eng., Customhouse, Charleston, S. C. Bids Apr. 26. CD 5/3, under LB.

A B C Ditching Co., Columbia, S. C., LB $106,752, water distr. sys. exten., WEST COLUMBIA, S. C. Town, West Columbia, S. C. B. P. Barber & Assocs., 1418 Marion St., Columbia, S. C., engrs. Bids Apr. 20. CD 6/10/53.

▲† **Ivey Brothers Constr. Co.,** 3252 Peachtree Rd., Atlanta, Ga., LB, $3,076,138, powerhouse, switchyard, transformer yard, Buford Dam, Chattahoochee River, GEORGIA. U. S. Eng., P.O. Box 1169, Mobile 7, Ala. Bids May 3. CD 4/13.

▲† **Ivey Brothers Constr. Co., Inc.,** 3252 Peachtree Rd., Atlanta, Ga., CA, $3,076,138, powerhouse, switchyard, transformer yard, Buford Dam, Chattahoochee River, GEORGIA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids May 3, awarded May 5. CD 5/9, under LB.

† **R. E. Rube Clarson Inc.,** 1930 13 Ave. N. St. Petersburg, Fla., LB $707,187 special ordnance storage facilities, Pinecastle Air Force Base, Eng-08-123-55-82, ORLANDO, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Apr. 26. CD 3/30.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

Ky.—Ellis, Kelly Co., Owensboro, Ky. LB $546,222. c. conc. 1.883 mi. Morganfield-Shawneetown Rd., F 165 (3), SP 113-267, Union Co.;

Ky.—Adams Constr. Corp., Paintsville, Ky. LB $176,841. b. conc. Class I surf. 15.964 mi. various roads, S 61 (4), SP 67-59, Letcher Co.;

Ky.—Arvie M. Burchett, Prestonburg, Ky. LB $74,437. reconstr. traffic bound limestone 2.452 mi. RS 26-725, Clay Co.;

Ky.—Circle Constr. Corp., Bowling Green, Ky. LB $111,838. bit. surf. Class C-1 28 mi. various roads, SP 71-791, Logan Co.;

Ky.—Elizabethtown Paving Co., Inc., Elizabethtown, Ky. LB $89,774. surf. 17.563 mi. various roads, S 586 (1), SP 62-201, S 347 (3), SP 90-205, S 333 (4), SP 78-122, Larue, Nelson and Marion Counties.;

Ky.—Highland Co., Inc., 644 Baxter St., Louisville, Ky. LB $153,516. bit. surf. Class C-1 and traffic bound limestone 6.795 mi. Glasgow-Beckton Rd., S 506 (1), RS 5-752, Barren Co.;

Ky.—Holbrook Bros., Salversville, Ky. LB $79,071. reconstr. traffic bound slag 2.064 mi. Ball Branch-Soft Shell Rd., RS 6-618, Knott Co.;

Ky.—Kentucky Road Oiling Co., Frankfort, Ky. LB $112,390. bit. surf. Class C-1 8.509 mi. Cawood-Smith-Brownies Creek Rd., S 164 (5), SP 48-108, Harlan Co.;

Ky.—Middle West Roads Co., 1201 Short St., Louisville, Ky. LB $571,776. b. conc. Class I surf. 13.692 mi. Gilbertsville-Paduach Rd., F 530 (8), SP 79-653, SP 79-393, SP 73-432, Marshall and McCracken Counties; LB $105,429. b. conc. Class I surf. 0.982 mi. General Electric Access Road, RS 56-768, Jefferson Co.;

Ky.—Robert M. Robinson, Owensboro, Ky. LB $109,019. bit. surf. Class C-1 6.865 mi. London-Barbourville Rd., S 150 (6), SP 63-91, Laurel Co.;

Ky.—R. B. Tyler Co., 1446 Levering St., Louisville Ky. LB $230,680. b. conc. surf. Class I 35.171 m S 318 (6), S 393 (4), S 328 (3), S 405 (4), S 4-21, SP 20-44, SP 42-148, SP 42-248, SP 42-268. Ballard, Carlisle and Gravds Counties;

Ky.—A. W. Walker & Son, Mount Sterling, Ky. LB $83,118. bit. surf. Class F 10.767 mi. various roads, Bath Co., Bids Apr. 29;

cancelled bids to have been opened Apr. 29, reconstr., traffic bound surf. 2.11 mi. Langstaff-Easterday Rd. from Ky. 36 at Easterday exten. southeast, southwest, RS 21-352, Carroll Co., CD 4/14.

C. O. Osborn Contg. Co., 1520 29 Court S., Birmingham 9, Ala., LB, $174,066 3 mi. 12-in c.i. pipe, 500 gpm pumping station, PLEASANT GROVE, ALA. City, Pleasant Grove, Ala. Bids May 2. J. W. Goodwin Eng. Co., 2111 7 Ave. S., Birmingham, Ala., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Southern Commercial Constr. Co., Inc.,** 1341 Pennsylvania Ave. S.E., Wash., D. C., LB $1,318,000, Kenmore Junior HIGH SCHOOL, ARLINGTON, VA. Arlington Co. Bd. Educ., 1426 N. Quincy St., Arlington, Va. Bids May 5. CD 3/31.

▲ **Ed. L. Powers,** Jesup, Ga., CA, $1,489,018 Cairo High SCHOOL, Washington Consolidated SCHOOL, Bechbranch Elementary SCHOOL, Shiver Elementary SCHOOL, CAIRO, GA. State School Bldg. Auth. 41 Exchange Pl. S.E., Atlanta, Ga. Bids Mar. 31, awarded May 3. CD 4/15, under LB.

▲ **Culpepper & Edwards,** Pelham, Ga., CA $1,380,977 Reedy Creek Elementary SCHOOL; Okapilco Elementary SCHOOL addn., mechanical remodeling; Berlin Elementary SCHOOL addn. and mechanical remodeling; Doerun Elementary and High School addn. and Doerun Shop; Funston Elementary SCHOOL; Doerun Colored Elementary School; Charles A. Gray Elementary SCHOOL; Norman Park Elementary and high SCHOOL addn. mechanical remodeling of Norman Park Elementary and High School; Hamilton Elementary SCHOOL MOULTRIE, GA. State School Bldg. Auth., 41 Exchange Pl. S.E. Atlanta, Ga. Bids Apr. 14, awarded May 3. CD 4/21, under LB.

Lamar & Reddick, N. Center St., Thomaston, Ga., CA $906,135 Lincoln Park Elementary SCHOOL addn. for Negroes; Yatesville Elementary SCHOOL for Negroes; Fellowship Elementary SCHOOL for Negroes; Thomaston Training School for NEGROES; Yatesville Elementary and High SCHOOL; James R. Atwater Elementary and Junior High SCHOOL addn.; John Thurston Elementary and Junior High SCHOOL addn., John G. Gordon Elementary and Junior High SCHOOL addn., Rock Hill Elementary and Junior High SCHOOL addn., THOMASTON, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Apr. 19, awarded May 3. CD 4/21, under LB.

W. B. Johns Constr. Co., 304 W. 7 St., Tifton, Ga., LB $549,864, Kingsland Union Elementary SCHOOL addn., St. Mary's Elementary SCHOOL addn., Camden County Training SCHOOL; Raldph Bunche High and Elementary SCHOOL addn.; Camden County SCHOOL; Kingsland Elementary SCHOOL, Tarboro Elementary SCHOOL, WOODBINE, GA. State School Bldg. Auth., 41 Exchange Pl S.E., Atlanta, Ga. Bids May 5. CD 4/4.

Dye & Mullins, Drawer 112, Columbia, Miss. LB $597,000 6 story concrete OFFICE, Laurel and Fifths Sts., BATON ROUGE, LA. Union Federal Savings & Loan Assn., 500 Florida St., Baton Rouge, La. Bids Apr. 25. CD 3/30.

W. A. McMicheal Constr. Co., Box 508, Shreveport, La. LB $938,826. GRADE SCHOOL near Metcalf on Woolworth Rd., SHREVEPORT, LA. Caddo Parish School Bd., Shreveport, La. Bids Apr. 29. CD 4/18.

▲† **John Wile Constr. Co.,** 826 Humler Ave., Louisville, Ky. CA $2,558,780, est. $3,300,000. imprv. 160 Enlisted Men's BARRACKS, ENG-15-014-55-125,

(Continued on page 86)

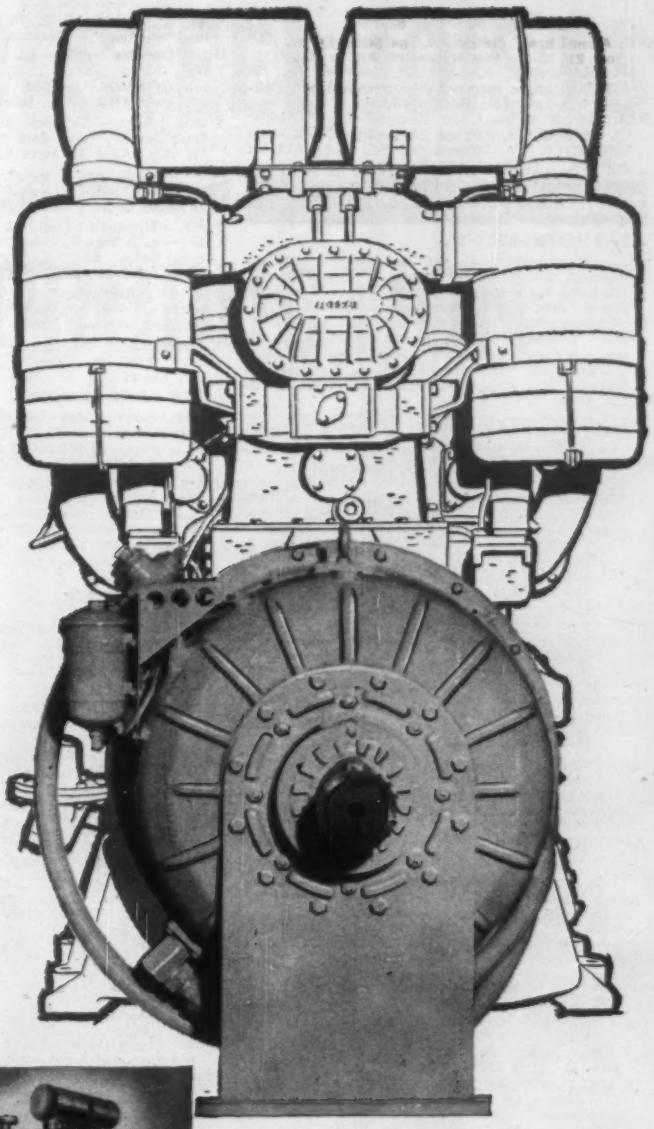
more flexibility
more wear life
more work

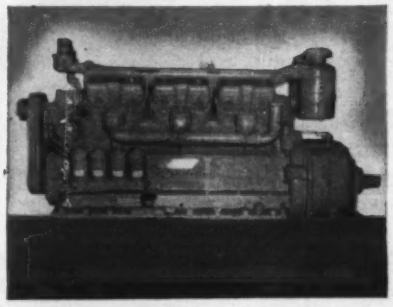
from new

CATERPILLAR

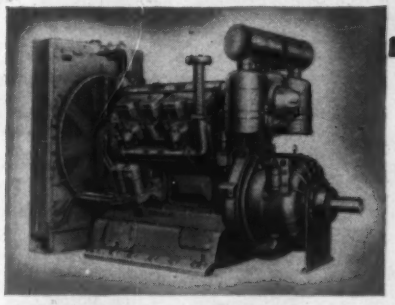
Torque Converter

Power Units . . .





Caterpillar Torque Converter Power Unit — a Model D386 Cat Diesel working through Twin Disc Model CF Torque Converter.



Cat D375 Torque Converter Power Unit. Twin Disc Torque Converters are standard equipment.

Twelve different torque converter arrangements are available for six Caterpillar Diesels, up to 493 h.p. Twin Disc also provides a wide choice of output shafts, for both in-line and side loads.

FOR THE FIRST TIME, you can order any one of 6 Cat Diesel Engines *Torque Converter-equipped at the factory* . . . as complete Torque Converter Power Units, developed through design teamwork by Twin Disc and Caterpillar engineers.

The result is *tremendous* performance—for power source and power linkage are *ideally* matched.

To give you a quick idea of how much Torque Converters mean to modern diesel power, here are a few facts you'll want to remember: on the new Cat Power Units, the Twin Disc Torque Converters • *match torque output automatically to the load* • *start loads smoothly* • *provide control of load movement without using clutch* • *prevent overloads from killing engine* • *permit hovering or holding under power* • *keep engines operating in maximum efficiency range at all times.*

Whether you're thinking about a new power unit or planning to replace a present one, find out how much *more* flexibility, *more* wear life, and *more work* you'll get *through Twin Disc Torque Converter Drive.* Contact your engine dealer . . . he'll give you the facts and figures.

In the meantime, if you want more details on other Industrial-Type Torque Converters, write Twin Disc, Hydraulic Division, Rockford, Ill., and ask for Bulletin 135-D. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin; Hydraulic Division, Rockford, Illinois.

TWIN DISC

CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC

Torque Converters

(Continued from page 84)

FORT KNOX, KY. Purch. & Contracting Officer, Fort Knox, Ky. Bids Apr. 26, awarded May 2. CD 4/15.
Wehr Constructors, P.O. Box 376, Louisville, Ky. CA $526,909. imprvs. Bachelor Officers' QUARTERS, ENG-15-014-55-136 (Fort Knox, Ky.).
Robert Struck & Sons, 920 Dandridge St., Louisville, Ky. LB $400,853. Hartlage Elementary SCHOOL, near LOUISVILLE, KY. Jefferson Co. Bd. Educ., 618 W. Jefferson St., Louisville, Ky. Bids May 5. CD 4/28.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Wis., Chilton—HOSPITAL—BA 5/24—Calumet County Memorial Hospital Assn., Chilton, 1 story, T shaped, 200 x 200 ft. hospital $500,000. F. W. Raeuber & Assocs., 1024 S. 9 St., Manitowoc, archts. CD 2/15.
O., Hillsboro—SCHOOL—BA 5/27—Hillsboro Local School Dist., Hillsboro, 2 story, bsmnt., brick, structural steel, rein.-con. elementary school, Beech and East St. $344,000. Plans deposit $25. Sullivan-Isaacs & Sullivan, 3117 Eastern Ave., Cincinnati, engrs,-archts. CD 8/24.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Crew Constr. Co., Clough Park, Cincinnati, O., LB $240,504, est. $231,695, imprv. Mears Ave. from Beechmont to Glade Sts. widen to 36 ft., c. conc. resurf. install curbs, sidewalks, necessary sewers, CINCINNATI, O. City, City Hall, Cincinnati, O. T. J. Montgomery, Cincinnati, city engr. Bids May 3. CD 4/25.

▲ **Kulka Industrial Corp.**, 826 N. Webb St., Alliance, O., LB $536,429, superstructure for Division St. Bridge from relocated Dearborn St. to Brier Hill Works of Youngstown Sheet & Tube Co., YOUNGSTOWN, O. City, City Hall, Youngstown, O. Bids May 2, CD 4/1;
The Heller-Murray Co., 222 W. Rayen St., Youngstown, O., LB $315,376, substructure for Division St. Bridge, (Youngstown, O.);
Harrison Constr. Co., 1101 Western Ave., Pittsburgh, Pa., LB $237,926, roadway and pavement for Division St. Bridge, (Youngstown, O.)

▲ **ILLINOIS**—State Div. Hys., Springfield, rejected bids Apr. 22, bit. resurf 1.42 mi. S.B.I. Routes 4 and 18, Chicago, Cook Co. LB $91,979; c. conc. ½ mi. dual lane, F.A. 131, Chicago, Cook Co. LB $1,499,598. CD 4/27.
Leininger Constr. Co., 30 N. La Salle St., Chicago 2, Ill., CA $523,531 resurf. Kedzie Ave. from Cermak Rd. to W. Chicago Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 27. CD 5/4, under LB.
Robert Springs, 400 S. Water St., Johnson City, Ill., CA $59,828, water distr. system, LOAMI, ILL. Village, Village Hall, Loami, Ill. Caldwell-Rhoads Co., W. College at Diamond Sts., Jacksonville, Ill., engrs. CD 4/21, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Eureka Constr. Co.**, 1406 E. Livingston Ave., Columbus 8, O. Owner Builds. $3,500,000. 200 ranch type HOMES, along Eakin Rd. in southwestern COLUMBUS, O.

▲ **Glass City Constr. Co.**, 3008 Bellevue St., Toledo, O. Owner Builds. $1,000,000. 150 HOMES, adjacent to Miracle Mile Shopping Center, Jackman and Laskey Rds., TOLEDO, O.

C. L. Bartel Co., 302 West Reserve Life Bldg., Muncie, Ind. Owner Builds. $450,000. low-cost HOUSING, in River View Heights, MUNCIE, IND.

▲ **B. C. D. Real Estate Co.**, 730 Prairie St., Brookfield, Ill., Own Forces, $1,500,000. 100 HOMES, ADDISON, ILL.

▲ **A. L. Jackson Co.**, 308 W. Washington St., Chicago 6 Ill., CA, $1,500,000. FACTORY, 630 W. Grand Ave., CHICAGO, ILL. Western Electric Co., Hawthorne Station, Chicago, Ill. Awarded May 2.

▲ **Ben Sears Constr. Co.**, 9656 Crawford St., Skokie, Ill. Own Forces, $9,000,000, 500 HOMES area of Crawford St. and Rte. 58, SKOKIE, ILL.

▲ **J. McHugh Constr. Co.**, 6449 S. South Park Ave., Chicago, Ill., LB $1,809,500. WAR MEMORIAL, MILWAUKEE, WIS., Milwaukee Co., Park Comn. Court House, Milwaukee, Wis. Bids May 5. CD 3/24.

▲ **The Estate Exchange**, 4030 Oakwood Blvd., Melvindale, Mich. Owner Builds. $2,500,000. Melwood Park Subdivision, 200 HOUSES, Elizabeth Oakwood Blvd. Section, MELVINDALE, MICH.

▲ **Beverly Building Co.**, 17534 West Seven Mile Rd., Detroit, Mich. CA Est. $3,000,000. North-Hill Development, 220 ranch HOUSES, ROCHESTER, MICH. Rose-Hill Realty Co., 194700 Grand River, Detroit, Mich.

Palmer-Smith Co., 414 Brainard St., Detroit 1, Mich. CA $443,407. general contract Riverview Elementary SCHOOL, WYANDOTTE, MICH. School District No. 2, Monguagon Twp., 12531 Longsdorf St., Wyandotte, Mich. Bids Mar. 31. CD 3/15.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Kan., Topeka**—BUILDINGS, etc.—BA 5/24—U. S. Eng., 6001 Davidson Bldg., Kansas City 8, Mo., constr. bldgs., utilities Group E, Forbes Air Force Base, ENG-23-028-55-84. $300,000-$350,000. CD 4/29.
Minn., Columbia Heights—BA 5/24—City, R. L. Ernest, mgr., furnish, install 9,000 lin. ft. 6 in. c.i. water mains. $44,000. R. D. Thomas & Assoc., 400 Metropolitan Bldg., Minneapolis, engr. CD 6/6/49.
Minn., Columbia Heights—BA 5/24—City, R. L. Ernest, mgr., furnish, install 12,000 lin. ft. 8 and 10 in. sanitary sewers. $73,000. R. D. Thomas & Assoc., 400 Metropolitan Bldg., Minneapolis, engrs. CD 3/11.
† **Okla., Altus**—TRAINING BLDG.—BA 5/25—U. S. Eng., Box 61, Tulsa, Zone 2, operational crew training bldg., Altus Air Force Base, ENG-34-066-55-104. $245,000.
Tex., Weslaco—BA 5/26—City, street imprvs., surf. $75,000. Sigler, Clark & Winston, Box 428, engrs.
† **Ark., Blytheville**—FUELING FACILITIES—BA About 6/7—U. S. Eng., P.O. Box 867, Little Rock, Ark., aircraft fueling facilities, Blytheville Air Force Base, ENG-03-050-55-122. CD 12/1/53.
† **N. M., Albuquerque**—SWIMMING POOL, etc.—BA About 6/17—U. S. Eng., P. O. Box 1538, swimming pool and bathhouse, Sandia Base, ENG-29-005-55-46.
Kan., Marysville—BA 6/20— City, sewage treatment plant, $190,000, Kenneth H. Larkin, 19 E. Gregory St., Kansas City, Mo., engr. CD 3/7.

BIDS ASKED—BUILDINGS

▲ **Mo., North Kansas City**—OFFICE—BA 5/26—Consumers Co-operative Assn., 318 E. 10 St., Kansas City, Mo., office. $1,000,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt. CD 3/29.
† **Tex., Daingerfield**—LABORATORY—BA 5/26—Bureau Yards & Docks, Dpt. Navy, 8th Naval Dist. Bldg. 16, Naval Station, New Orleans (Algiers), La. ordnance aerophysics laboratory, cooling water intake and discharge sys. for test cells, NOY 86345. $100,000.
▲ **Okla., Tulsa**—HIGH SCHOOL—BA 6/2—Bd. Educ., 410 S. Cincinnati St., Edison High School. $1,800,000. Black & West, Tri State Insurance Bldg., archts. CD 5/24/54.
Colo., Adams City—SCHOOL—BA 6/10—School District No. 14, Adams County, Adams City, 1 story, L shaped, brick Kearney Junior High School addn. Over $344,000. Alfred Watts Grant, 1640 Court Pl., Denver, Colo., engr.-archt. CD 12/15.
† **Kan., Fort Riley**—HOSPITAL—BA On Or About 6/21—U.S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., hospital, ENG-23-028-55-89. CD 11/10/53.
▲ **Mo., Independence**—SCHOOL—BA 6/28—School Bd., School Bldg., 2nd part secondary school, U.S. Hy. 24 and Noland Rd., $1,158,300, Marshall & Brown, 1016 Baltimore St., Kansas City, Mo., archts. CD 11/30/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,
Woodrich Constr. Co., Hopkins, Minn. CA $765,801. c. conc. resurf., shoulder grading 11.1 mi. between 0.5 mi. west of TH 100 near St. Paul and 1 mi. west of St. Croix River, Ramsey and Washington Counties. CD 4/27, under LB.
Kimmes Constr. Co., Hastings, Minn. LB $391,798. grading, storm sewers, sanitary sewers, culverts, aggregate base, b. conc. surf. other ground preparation for stadium, BLOOMINGTON (P.O. MINNEAPOLIS) MINN. Metropolitan Sports Area Comn., J. D. Kempf, secy., Bloomington, Minn. Bids May 3. CD 4/20.
† **Lynch Brothers**, 3425 Stone Way, Seattle 3, Wash. CA $111,146, constr. portion of grout curtain, Sect IIIB, on east abutment of Garrison Dam, Inv. 32-015-55-41, NORTH DAKOTA. U.S. Eng., Riverdale, N.D. Bids Mar. 15. CD 2/8.
† **U.S. Eng.**, Riverdale, N.D., rejected bids April 5, pumps for Garrison Dam and Reservoir Proj., Inv. 32-015-55-54, NORTH DAKOTA.
SOUTH DAKOTA—State Hy. Comn., Pierre,
W. E. Bartholow & Son Constr. Co., Huron, S.D., CA $120,515, bit. surf. (maint. retread type) 12.665 mi. FAP's 44 (pt.) and 45 (pt.) Roberts and Grant Counties. Bids Apr. 26. CD 4/14.
KANSAS—State Hy. Comn., Masonic Temple, Topeka, rejected bids Apr. 28, c. conc. 0.035 mi. Proj. 69-46 U 083-3 (6), Part II, Johnson Co. Bids Apr. 28. CD 4/15.
OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Gragg Constr. Co., Henryetta, Okla., LB $81,067, est. $91,012, highway grade separation for US 60 and 66 west of Fairland, Ottawa Co. Bids May 3. CD 4/22.
▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Okla.—**McConnell Constr. Co.**, 5020 N.W. 16 St., Oklahoma City 7, Okla., LB $238,889, est. $230,430, stabil. aggregate base with rock asph. surf. 6.197 mi. State Hy. 7 in Atoka, Atoka Co.; LB $269,504, est. $247,816, rock base, double bit. surf. 4.927 mi. S.E. 74 St. road same being RD-3 (2). Oklahoma City, Oklahoma Co.;
Okla.—**Burbank Rock Co.**, Ponca City, Okla., LB $154,256., est. $171,583, grade, drainage 1.696 mi. U.S. 60 west of Fairland, Ottawa Co.;
Okla.—**Public Constr. Co.**, 1200 S. Cherokee St., Muskogee, Okla., LB $153,267, est. $149,905, stabil. aggregate base, double bit. surf. 6.067 mi. State Hy. 100, Stillwell, Adair Co.; LB $122,136, est. $122,043, stabil. aggregate base, double bit. surf. 5.164 mi. State Hy. 100, Ten Killer Ferry, Cherokee Co.;
Okla.—**C. E. Keck**, Fairview, Okla., LB $125,312, est. $134,937. grade, drainage 4.5559 mi. Hy. 99-B, east of Bowlegs, Seminole Co.; LB $200,441, est. $217,656, grade, drain and 3 culverts 5.15 mi. Hy. 99-B, east of Bowlegs, Seminole Co.;
Okla.—**Smith Bros.**, Noble, Okla., LB $225,156, est. $203,000, stabil. aggregate base, rock asph. surf. 7.609 mi. Hy. 48, Allen, Pontotoc Co.; LB $86,307, est. $82,316, stabil. asph. base, single bit. surf. 1.692 mi. county road, Wanette, Pottawatomie Co.;
Okla.—**T.&R. Constr. Co.**, Barnes Bldg., Muskogee, Okla. LB $139,024, est. $156,327, grade, drainage 6.272 mi. Hy. 27 west of Idabel, McCurtain Co.;
Okla.—**Cohenour Constr. Co.**, Gilbert Bldg., Ardmore, Okla., LB $84,485, est. $95,094, stabil. aggregate base, double bit. surf. 2.889 mi. Hy. 61 at Idabel, Pontotoc Co. Bids May 3. CD 4/22.
H. H. Null, 215 Lockwood Dr., Houston 11, Tex. LB $109,191, est. $350,000. Unit 1, constr. Air Base Interceptor Sewer, ABILENE, TEX. City, Abilene, Tex. Bids Apr. 29. CD 4/13.
E. E. Contg., 902 State St., Houston, Tex., CA $570,265. Elevated Roadway Structure No. 3, Crawford-Elysian St. (from Buffalo Bayou south to beyond Ruiz St.), HOUSTON, TEX. City, City Hall and Harris Co., Court House, Houston, Tex. Bids Apr. 27. CD 5/4, under LB.
John R. Pearse Constr. Co., 225 Bannock St., Denver, Colo., CA $233,170. water treatment plant, appurtenances, DENVER, COLO. William Jay Constr. Co., 401 Vallejo St., Denver, Colo. Bids Apr. 29. CD 4/22.
† **Ramey Constr. Co.**, Box 6, Amarillo, Tex., LB $232,519, est. $100,000. cold storage bldg. and technical laboratory bldg., Clovis Air Force Base, ENG-29-005-55-89, CLOVIS, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 28. CD 4/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Standard Constr. Co.**, 250 Builders Exchange Bldg., Minneapolis, Minn., CA $1,987,200. general contract Senior High SCHOOL, on east side of Hy. 100 between 36 and 38 Sts. North, ROBBINSDALE, MINN. Bd. Educ., R. T. Parish, clk., Robbinsdale, Minn. Bids May 3. CD 3/29.
A. Newman Heating & Plumbing Co., 1601 Como Ave., St. Paul, Minn. CA $437,423. mechanical contract. (Robbinsdale H. S.).
Henkel Constr. Co., 525 9 St., S.E., Mason City, Ia., CA, $417,100. Elementary SCHOOL and 2 Elementary SCHOOL addns., MASON CITY, IOWA. Bd. Educ., Mason City, Iowa. Bids Apr. 14. CD 12/1.
▲ **W. A. Klinger & Co.**, 2015 E. 7 St., Sioux City, Iowa, CA Est. $1,150,000. general contract, 3 and 4 story, part bsmnt., 150x150 ft., masonry, concrete Y.M.C.A. SIOUX CITY, IOWA. Sioux City Young Men's Christian Assn., 701 Pierce St., Sioux City, Iowa. Bids May 3. CD 2/17.
Tellepsen Constr. Co., Box 2536, Houston, Tex., CA $379,185, Unit 1, SHOPPING CENTER, two bldgs., "A" and "B", FREEPORT, TEX. Freeport Land Co., c/o Dan M. Moody, Abstract & Title Bldg., Houston, Tex. Bids Apr. 19. CD 4/13.
Erwin-Newman Co., 2400 Old Spanish Trail, Houston, Tex., CA $424,175, PLANT addn., GARLAND, TEX. Temco Aircraft Corp., Garland, Tex. CD 5/4.
Syndicate, c/o Larry D. Sligar, 8220 Grafton St., Houston, Tex. Own Forces. $350,000. 50 DWELLINGS. $385,500, 65 frame DWELLINGS, HOUSTON, TEX. CD 1/12.
Jim West Building Co., 226 Winkler St., Houston, Tex. CA $721,618, (6) 33 DWELLINGS, (7) 45 DWELLINGS, HOUSTON, TEX. Jim West & Assocs., 226 Winkler St., Houston, Tex. CD 6/3.
Robert H. Smith & Co., 1915 Colfahl St., Houston, Tex., LB $537,492, ADMINISTRATION BLDG. and GIRLS' DORMITORY, HOUSTON, TEX. Sacred Heart Dominican College, 6501 Almeda Rd., Houston, Tex. Bids Apr. 26. CD 12/22.
Jim West Building Co., 226 Winkler St., Houston, Tex. CA $361,000, 35 DWELLINGS, CA $389,905, 38 DWELLINGS, HOUSTON, TEX. Jim West & Assocs., 226 Winkler St., Houston, Tex. CD 1/12.
▲ **Southwestern Gas & Electric Co.**, Lake Cherokee, Tex. and Marshall, Tex. Own Forces. $4,750,000. 75,000-kw GENERATOR POWER UNIT, at Lake Cherokee, LONGVIEW, TEX. CD 9/16/52.
▲ **Lowe Constr. Co.**, 2325 Ninth Ave. N., Billings, Mont. CA $1,223,100. general contract JUNIOR HIGH SCHOOL, BILLINGS, MONT. Yellowstone Co. School Dist. No. 2, Billings, Mont. Bids May 4. CD 3/29.
▲ **Hightower & Lubrecht Constr. Co.**, Missoula, Mont. CA $1,448,120. general contract HIGH SCHOOL, MISSOULA, MONT. Missoula County High School Dist., Missoula, Mont. Bids Apr. 28. CD 3/30.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Tacoma**—BA 6/2—City, City Hall, 16 transformers, several circuit breakers and a condensor. H. A. Cole, supt. Utilities Div. CD 11/9.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Calif., Gardena—Grandview Bldg. Co., 470 S. Beverly Dr., Beverly Hills, soon lets contracts, storm drain channel and pumping station, Johnson Ranch No. 1, $100,000. Engineering Service Corp., 1127 W. 7 St., Los Angeles, engrs.
Calif., Gardena—Grandview Bldg. Co., 470 S. Beverly Dr., Beverly Hills, soon lets contract streets imprvs. in Tracts 16676, 20419, 20415, 16463, Johnson Ranch No. 1. $200,000. Engineering Service Corp., 1127 W. Washington Blvd., Los Angeles, engrs.

SOON LETS CONTRACT—BUILDINGS

▲ **Calif., Santa Monica**—APARTMENT—BA 5/19—Bay Cities Corp., c/o Kleigman & Leizer, archts., 8588 Melrose Ave., Los Angeles, and Barienbrock & Murray, archts., 225 Santa Monica Blvd., soon lets contract 8 story, rein.-con. apartment, $1,000,000.

(Continued on page 88)

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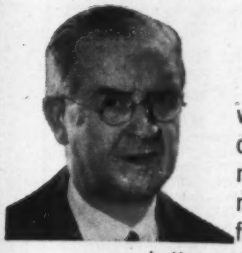

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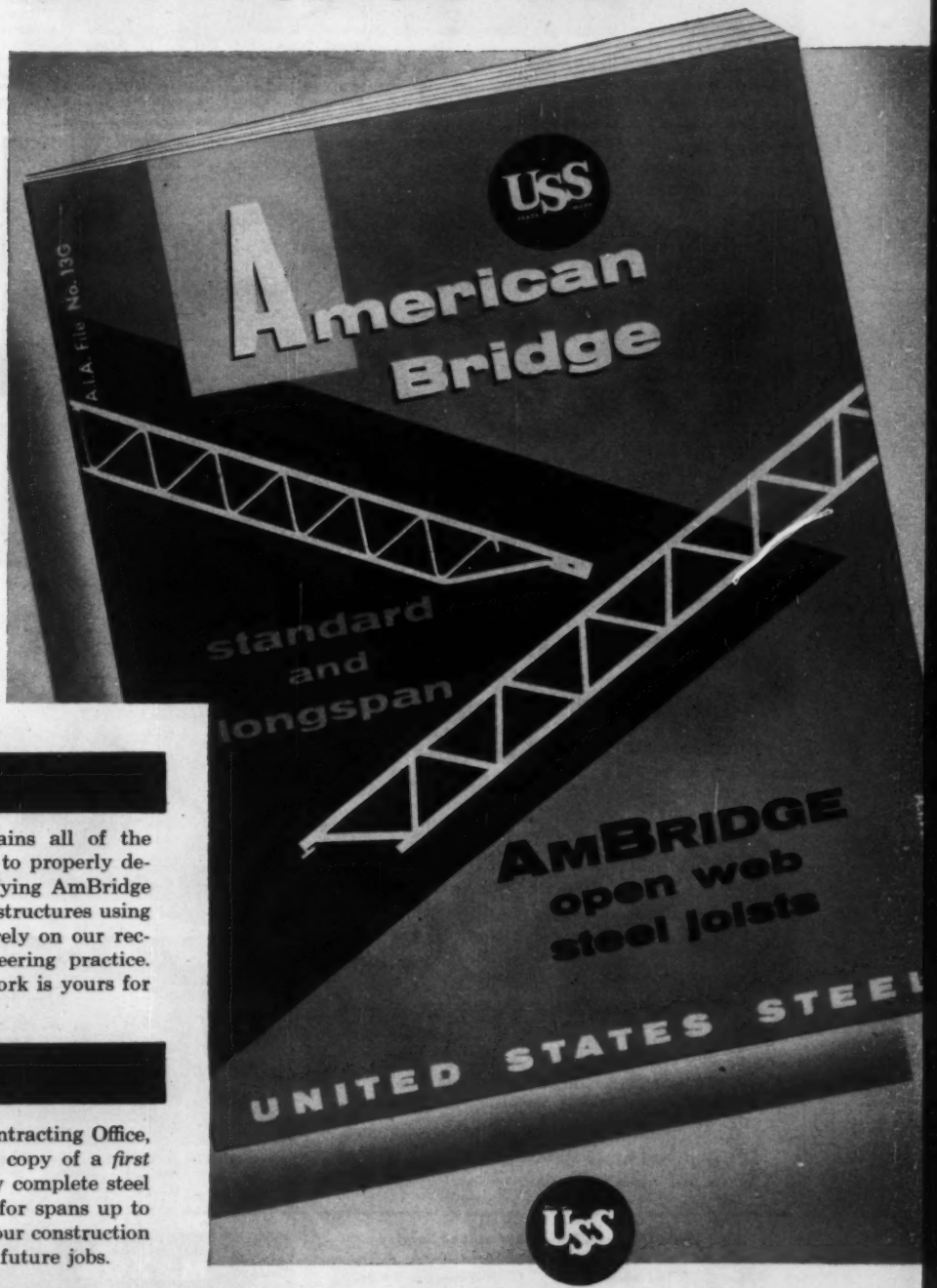

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AMBRIDGE STEEL JOISTS

(Continued from page 86)

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Lembke, Clough & King,** Box 1391, Las Vegas, **Nev.** CA **$794,343,** Air Force Station, SM-163, ENG-04-353-55-120, INDIAN SPRINGS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 27, awarded Apr. 28. CD 5/3, under LB.

WASHINGTON—State Hy. Comn., Olympia,

A. J. Cheff Constr. Co., 10054 W. Marginal Way Seattle, Wash., LB **$260,383,** rein.-con. arch undercrossing with rein.-con. T-beam approaches 0.048 mi. Primary State Hy. No. 1, Custer Way undercrossing, F.A.P. BIN-001-2 (33), Thurston Co. Bids May 3. CD 4/20.

▲ **WASHINGTON**—State Hy. Comn., Olympia,

Wash.—**Goodfellow Bros., Inc.,** P.O. Box 1337, Wenatchee, Wash., LB **$475,987,** bit. surf. 1.062 mi. Primary State Hy. 10, F.A.P.F. 029-1 (3), Chelan Co.

Wash.—**Asphalt Paving & Eng. Co.,** 5402 San Francisco Ave. S.W., Tacoma, Wash., LB **$85,866,** b. conc. paving 2.787 mi. Waller Rd. and E. 72 St., FAS S 04542 (1) and S 0885 (2) Pierce Co.;

Wash.—**C. E. Oneal,** Ellensburg, Wash., LB **$74,516** draining, grading, surf. 8.114 mi. Tunk Creek Rd., F.A.S. S 1141 (1) Okanogan Co.;

Wash.—**Peter Kiewit Sons Co.,** Box 491, Longview, Wash., LB **$510,475,** draining, grading, surf. 3.946 mi. Primary State Hy. 12, Skamokawa to Elokomin River, F.A.P. F-004-2 (12), Wahkiakum Co.;

Wash.—**K. L. Goulter & Sons,** 3419 16 Ave. W., Seattle, Wash., LB **$62,072.** bit. 2.367 mi. Secondary State Hy. 15-A, F.A.S. S 0213 (1), Snohomish Co.;

Wash.—**J. N. Conley,** 4332 N. E. Royal Court, Portland, Ore., LB **$228,811,** surf. b. conc. paving, 1.43 mi. Primary State Hy. 8, F.A.P. F 014-2 (2) Skamania Co. Bids May 3. CD 4/20.

Service Hardware Co., 1545 Bay St., Tacoma, Wash., LB, **$61,700.** core drilling, pump testing and churn drilling at Rocky Reach Dam site on Columbia River, Wenatchee, WASHINGTON. Chelan County Public Utility District, Doneen Bldg., Wenatchee, Wash. Bids Apr. 29. CD 4/19.

† **Murphy Brothers,** E. 3728 Broadway, Spokane, Wash., LB, **$319,718,** est. $338,982 earthwork, canal lining, structures for Main canal, Sta. 1325 plus 00 to end; and Hever wasteway, Station 1 plus 00 to 53 plus 96 Yakima Proj. Kennewick Div., Spec. DC 4375, WASHINGTON. Bureau Reclamation, Dpt. Interior, Kennewick, Wash. Bids Apr. 28. CD 3/14.

F. Coluccio, 7743 Seward Park Ave., Seattle, Wash., LB, **$109,776,** 59,650 ft. 6- to 10-in. concrete sewer lines, Mercer Island Sewer Dist., MERCER ISLAND, WASH. Mercer Island Sewer Dist., Box 141, Mercer Island, Wash. Bids May 2. CD 4/19.

Northwest Asphalt Co., 7343 E. Marginal Way, Seattle 4, Wash., LB, **$466,282** resurf. 6,000 ft. Renton Municipal Airport Runway, RENTON, WASH. Boeing Airplane Co., 7755 E. Marginal Way, Seattle 4, Wash. Worthington & Skilling, Lloyd Bldg., Seattle, Zone 1, engrs.

† **U. S. Eng.,** 4735 E. Marginal Way, Seattle 4, Wash. rejected bids Apr. 21, liquid fuel storage and dispensing facilities, heating fuel oil tanks and access road at Fairchild Air Force Base, Inv. 55-221, SPOKANE, WASH. LB **$149,139.** CD 4/27, under LB.

† **R. E. Ziebarth & S. B. Alper,** 21205 Baisa St., Torrance, Calif., CA, **$457,000,** fueling facilities, El Toro Marine Corp Air Station, NOY 86722, Spec. 45833, EL TORO, CALIF. Dpt. Navy, San Diego, Calif. Bids Apr. 12. CD 3/16.

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB, **$98,712,** est. $100,000 widening North/South runway, Los Angeles International Airport, LOS ANGELES, CALIF. Los Angeles Airport Dpt., 5800 Avion Dr., Los Angeles, Calif. Bids May 2.

Matt J. Zaich, 6828 Farmdale St., North Hollywood, Calif., CA **$874,813,** Proj. 268, Garvey Ave. storm drain, Pomona, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alacaar St., Los Angeles, Calif. Bids Apr. 22. CD 4/27, under LB.

▲† **Stolte, Inc.,** 1541 N. Foothill St., Pasadena, Calif., CA, **$2,063,800,** est. $2,000,000 flight test hangars, Edwards Air Force Base, ENG-04-353-55-126, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 28. CD 5/2, under LB.

▲† **Wm. H. Ladow, Inc.,** 4015 Scottdale St., Dallas, Tex., CA **$1,394,647,** automatic sprinkler protection for existing bludgs., Naval Supply Center, NOY 87433, OAKLAND, CALIF. Dist. P. Wks. Office, Twelfth Naval Dist., San Bruno, Calif. Bids Mar. 30. CD 3/9.

Crowell & Larson, 152 Geneva Rd., Covina, Calif., LB, **$159,466,** est. $100,000 Perris Valley Storm Drain, Perris, RIVERSIDE, CALIF. Riverside County Flood Control & Water Conservation Dist., 4050 Main St., Riverside, Calif. Bids May 2.

BUILDINGS

LOW BIDS AND CONRACTS

Bell & Valdez Development Co., 1044 116 Ave. N.E., Seattle, Wash., Day Labor, **$692,000.** 61 Houses, S.E. 40 St. and 138 Ave. S.E., BELLEVUE, WASH. CD 12/15.

Oscar R. Wayman, 3125 N.W. Front Ave., Portland, Ore. LB **$764,079,** 2 story POLICE HEADQUARTERS addn., PORTLAND, ORE., City, City Hall, Portland, Ore., Bids May 3. CD 4/13.

Ivan Wells & Sons, 2368 Houston St., Anaheim, Calif., Owner Builds, **$680,000,** 68 stucco DWELLINGS, Gilbert and Houston Sts., Tract 2287, ANAHEIM, CALIF.

▲ **Monarch Land Co., Inc.,** 114 S. Beverly Dr., Los Angeles, Calif., CA, **$1,742,500.** constr. 210 frame stucco DWELLINGS, Richvale, Faircrest and Goldendale Drives, BELLFLOWER, CALIF. Leffingwell Land Co., 114 S. Beverly Dr., Los Angeles, Calif.

G. W. Ornee, 1532 W. 103 St., Los Angeles, Calif., CA, 33,600 sq. ft. FACTORY, BELL GARDENS, CALIF. Savage Boat Works, 8616 S. San Pedro St., Los Angeles, Calif. James M. Fox, 5905 Pacific Blvd., Huntington Park, Calif., engr.

Butrees & McClellan, 1900 Beverly Blvd., Los Angeles, Calif., CA, **$117,000.** 120x248 ft., concrete MANUFACTURING BLDG., 7100 Deering Ave., CANOGA PARK, CALIF. Midtown Investment Co., 139 N. Broadway, Los Angeles, Calif. Denver Markwith, Jr., 1900 Beverly Blvd., Los Angeles, Calif., archt. Wallis H. Ayres, 1900 Beverly Blvd., Los Angeles, Calif., engr.

Stiglehauer Brothers, 8148 E. Phlox St., Downey, Calif. CA **$507,600,** 35,000 sq. ft. Alameda SCHOOL No. 6, 8131 Imperial Blvd., DOWNEY, CALIF. Alameda School Dist., 8613 E. Alameda St., Downey, Calif. Bids Mar. 25. CD 5/25/54.

G. J. Harlan, P.O. Box 755, Sacramento, Calif., CA, **$250,000.** SHOP, REPAIR BLDG., FREIGHT TERMINAL and WAREHOUSE, EUREKA, CALIF. Ways Redwood Empire Freight Line, c/o E. J. Taylor, archt., 818 19 St., Sacramento, Calif., archt.

▲ **Areka Lumber Co.,** Box 3008, Inglewood, Calif., Owner Builds, **$1,997,000,** 177 frame, stucco DWELLINGS, Rauburn and Fairvale Aves. and Goodway Dr., GLENDORA, CALIF.

El Rancho Verde, Box 389, Hayward, Calif., Owner Builds, **$817,500,** 109 frame, stucco HOME Subdivision, HAYWARD, CALIF.

Haas & Haynie, 275 Pine St., San Francisco, Calif., LB **$698,800,** 4 story, 31,700 ft. rein.-con WELFARE BLDG. addn., OAKLAND, CALIF. Bd. Supervs. Alameda Co. Courthouse, Oakland, Calif. John Hudspeth, 339 15 St., Oakland, Calif., archt.

T. C. Prichard & Son, 3514 9 St., Riverside, Calif., CA **$668,571,** 40,000 sq. ft. Victoria and Monroe SCHOOLS, RIVERSIDE, CALIF. Riverside City School District, 3954 12 St., Riverside, Calif. Bids Mar. 29. Caughey & Terstrom, 8717 W. 3 St., Los Angeles, Calif., archts. CD 5/6/54.

Dinwiddie Constr. Co., 210 Crocker Bldg., San Francisco, Calif., LB **$787,542,** 2 story, rein.-con. 150,000 sq. ft. WAREHOUSE, SAN FRANCISCO, CALIF. Macy's c/o John Bolles, archt., 918 Harrison St., San Francisco, Calif. Bids May 4. CD 4/26.

▲ **Theo. G. Meyer & Sons,** 200 Quint St., San Francisco, Calif., CA **$4,680,353,** 2nd unit, 14 story, rein.-con., 160,000 sq. ft. MEDICAL SCIENCE BLDG. 3 and Parnassus Sts., SAN FRANCISCO, CALIF. Bd. Regents, University of California, Berkeley, Calif. Bids Apr. 14. CD 4/20, under LB.

▲ **J. L. Eichler & Sons,** 2001 El Camino Real, Palo Alto, Calif., Owner Builds, **$1,650,000.** 100 HOME SUBDIVISION, TERRA LINDA, CALIF.

Sapp Bros. Constr. Co., 5133 W. Washington Blvd., Los Angeles, CA, **$99,000.** 118x200 ft., brick WAREHOUSE, 1329-1337 E. 16 St., LOS ANGELES, CALIF. Harry Turken, 1357 E. 16 St., Los Angeles, Calif.

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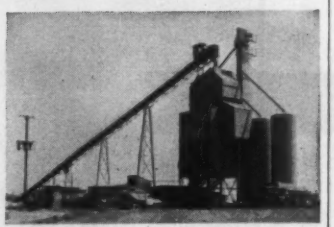
The automatic central mixing plant is midway on the 10-mile job. Three men run it. 14 Dumpcretes haul its 95,000 yd. production.

Here's the bonus. The single plant supplies concrete for bridges, culverts, walls and widening as well as paving.

"It's an efficient, high-production operation. We like it," says D. W. Winkelman, contractor.

This method cuts costs on small jobs, too. It's approved by 25 state highway departments. Write for bulletins today.



Central mixing plant located midway on job.

Slump, cylinder, beam and air test (above) all O.K.

Manufacturing Division, Maxon Construction Co., Inc.
708 Talbott Building, Dayton 2, Ohio

Send Me ☐ Paving on the Ohio Turnpike ☐ 8 Ways to Set Up For Central Mixing

Name_____

Firm_____

Street_____

City_____

MAXON DUMPCRETE

Fastest from plant to pour

R. R. Bradshaw, 8703 W. 3 St., Los Angeles, Calif., engr.

Property Management Corp., 15502 Crenshaw Blvd., Los Angeles, Calif., CA, $358,800. 36 frame, stucco DWELLINGS, 160 St. and Manhattan Pl., LOS ANGELES, CALIF. Alondra Gardens, Inc., 15502 Crenshaw Blvd., Los Angeles, Calif.

Woodside Builders, 2204 MacDonald Ave., Richmond, Calif., Owner Builds, $390,000. 44 HOMES, MARTINEZ, CALIF.

Wm. C. Crowell Co., 170 E. California St., Pasadena, Calif., LB, $477,500, est. $350,000 Valinda SCHOOL, PUENTE, CALIF. Rowland Union School District, 2036 S. Fullerton Rd., Puente, Calif. Bids Apr. 29. CD 4/20.

▲ **Tulare County**, Court House, Visalia, Calif., rejected bids Apr. 12, COURT HOUSE, VISALIA, CALIF., LB $3,175,000. CD 4/18, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Sask., Regina**—NURSING HOME—BA 5/24—Dpt. P. Wks., Parliament Bldgs., Regina, superstructure for nursing home, $1,000,000. Stock, Ramsey & Assocs., 1745 Scarth St., archts. CD 2/11, under LB.

Ont., Port Arthur—HOME FOR AGED—BA 5/26—Bd. Trustees District Home for the Aged, Public Utilities Bldg., Port Arthur, 2 story, steel, brick home for the aged, Algona St. $750,000. Rounthwaite & Fairfield, 22 Harbord St., Toronto, Ont., archts. CD 6/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ONTARIO**—Dpt. Hys., Parliament Bldg., Toronto, **Huron Constr. Co. Ltd.**, Richmond St., Chatham, Ont., CA, $1,209,061, Contract 55-31, Chatham Div., c. conc., gran. base 6.35 mi. Rochester Townline to Belle River Rd., Hy. 401. Bids Apr. 27. CD 5/5, under LB.

Ontario Constr. Co. Ltd., Box 36, St. Catherines, Ont., CA $282,303, est. $410,000. sewage treatment plant north of Hy. 2, near Coronation Park, TRAFALGAR, ONT. Trafalgar Twp., Trafalgar, Ont. Bids May 2. CD 4/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Kenney Constr. Co. Ltd., 5 Glebe St., Yarmouth, N. S. LB $380,000, 1 story FISHERIES EXPERIMENTAL PLANT, Badger's Quay, VALLEYFIELD, NEWFOUNDLAND. Dpt. Fisheries, Parliament Bldgs., Ottawa, Ont. Bids May 2. CD 4/19.

H. J. McFarland Constr. Co. Ltd., Talbot St., Picton, Ont., CA, $486,522, 50-unit HOUSING and services, PICTON, ONT. Central Mortgage & Housing Corp., 40 Eglinton Ave. E., Toronto 7, Ont. Bids Apr. 14, awarded May 3. CD 4/1.

▲ **Home Constr. & Maintenance Co.**, 36 Clayton Ave., St. Catherines, Ont., CA $1,250,000. SHOPPING CENTER, incl. 40-50 stores, department store, supermarket, 2 banks, 13-acre site, west of Glenridge Ave. in south end of city, ST. CATHERINES, ONT. Owner, c/o Macbeth & Williams, 104 Queen St., St. Catherines, archts. Awarded May 2.

Principal Investments Ltd., 133 Richmond St. W., Toronto, Ont., Owner Builds, $700,000. 7 story 94x131 ft. concrete, brick OFFICE, Duplex and Eglinton Aves., TORONTO, ONT. CD 10/9/53.

▲ **E. & G. Lagace Ltd.**, 11 Rue Lagace, Strathmore, Que., Owner Builds, $1,500,000. 90 split-level bungalows, HOUSING DEVELOPMENT, near St. Charles Rd., BEACONSFIELD, QUE.

Desauniers Constr. Ltd., 339 Conte St. Ville La Salle, Montreal, Que., LB $582,968, Leroux SCHOOL 9 Ave., Ville La Salle, MONTREAL, QUE. La Commission Scolaire des Ecoles Catholiques de Ville La Salle, Montreal, Que. Bids May 2. CD 4/22.

Meteor Century Builders, 800 Gordon Brown Bldg., Ontario St., Montreal, Que. Owner Builds, $580,000. 35 HOUSES, Gouin Blvd. near Persillier Blvd., MONTREAL, QUE. CD 3/23.

Smart Ave. Development, Inc., 5769 Monkland Ave., Montreal, Que., Owner Builds, $720,000. 45 split-level Bungalows, in HOUSING PROJECT, MONTREAL, QUE. David Reich, 1818 Sherbrooke St., W. Montreal, Que., archt.

Ross & Anglin Ltd., 4400 St. Catherine St., W. Montreal, Que., CA $200,000. WAREHOUSE, Pare St., MONTREAL, QUE. Standard Tube Ltd., 754 Wellington St., Montreal, Que. Awarded May 2. CD 3/4.

Fautex Development, 2nd Ave., Fille St. Martin, Que., Owner Builds, $500,000, 50 Houses HOUSING DEVELOPMENT, 2nd Ave., ST. MARTIN, QUE.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—BA 5/31—Alaska Road Comn., Dpt. Interior, Federal Bldg., Juneau,
Fairbanks—paving 41.8 mi. roads in Fairbanks area. Plans deposit $10. CD 8/17/45.

† **Alaska, Kodiak**—CABLES, etc.—BA 5/31—Alaska Communications System, 4735 E. Marginal Way, Seattle 4, Wash., install 2 cables in 7,000 ft. trench and splicing pits, Inv. 55-28; cable hut, Inv. 55-29.

† **Alaska, Fairbanks**—BA 6/1—Alaska P. Wks., Dpt. Interior, 123 W. 3 St., Juneau, lift station, 200 ft. 12 and 20 in. sewer lines for Weeks Field sewage

More Wheelbarrow POWER with Less MANPOWER

it's the WISCONSIN-POWERED Moto-Bug

Shown here are several units of a fleet of 12 MOTO-BUGS, handling concrete in hopper bodies on a 27½ million dollar bridge job near Boston. These "glorified power wheelbarrows", made by Kwik-Mix, Koehring Subsidiary, Port Washington, Wis., are powered by a Wisconsin Model AKN single-cylinder Heavy-Duty Air-Cooled Engine . . . *power to fit the job and the equipment.* The 10 cu. ft. hopper is interchangeable with a 1500 lb. platform or a 1000 lb. fork lift . . . versatility that takes the high costs and hard work out of material handling.

In addition to efficient AIR-COOLING at all temperatures ranging from extreme subzero to 140° F., Wisconsin Engine features include tapered roller main bearings, oil pump lubrication (a valuable safety feature), high tension rotary type OUTSIDE Magneto with Impulse Coupling for quick starts in any weather, and heavy-duty design and construction in all details.

You can't do better than to specify "Wisconsin Power" for *your* equipment . . . 12 models, 3 to 36 hp., single cylinder, 2- and V-type 4-cylinder.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

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Stained Yellow Bound with Steel Strapping

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	-15"	9.85	8.95
	-18"	11.50	10.50
	-24"	16.00	14.50
	-36"	24.00	22.50
¾"x1¾"	-12"	6.15	5.60
	-15"	6.60	6.00
	-18"	7.50	6.50
	-24"	11.00	10.00
	-36"	16.00	14.00

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collection sys., Proj. 50-A-190, Unit 2. Plans deposit $25. CD 10/23/53.

SOON LETS CONTRACT—BUILDINGS

▲ **Alaska, Anchorage**—POWER PLANT—Chugach Electric Assn., Inc., Anchorage, soon lets contract 52x126 ft. rein.-con. structural steel addn. to Knik Army Power Plant, $2,800,000. Plans deposit $50. G. E. Wieland, 6136 Arcade Bldg., Seattle 1, Wash., engr. CD 11/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Grove-Shepherd-Wilson & Kruge, Inc. and Marell** Constr. Co., Ltd., 120 6th Ave. N., Seattle, Wash., LB $3,615,500, est. $3,942,000, constr. pier, SEWARD, ALASKA. The Alaska Railroad, Dpt. Interior, Anchorage, Alaska. Earl & Wright, 233 Sansome St., San Francisco, Calif. engrs. Bids May 3.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Cilloniz-Olazabel-Urquiaga**, Lima, Peru, CA Est. $3,000,000. cement plant near PACASMAYO, PERU. Cia de Cemento Portland del Notre, S.A., Lima, Peru. Machinery to Cosmanna, Peruvian representative of MIAG, a German company. CD 1/26/49.

Proposed Projects

WATER SUPPLY

▲ **Ala., Huntsville**—Huntsville WW Utilities Bd., City Hall, 5 m.g. water storage, water distr. sys., extensive addns., 3 well supply and pumping station. $3,000,000-$3,500,000. Goodwin Engineers, Inc., 2111 7 Ave. S., Birmingham, Ala., consult. engr. CD 5/11/53.

▲ **Colo., Denver**—Denver Bd. Water Comrs., City & County Bldg., tunnel under the Continental Divide, constr. 2 reservoirs and new filter plant. $70,000,000. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

▲ **Mich., Detroit**—Bd. Supervs. Wayne Co., 3800 Cadillac Tower, 9.5 m.g. reservoir West Chicago Station, incl. 24 in. water main Middlebelt Rd., West Chicago to Warren Sts., 16 in. water main Michigan Ave., Merriman to Henry Ruff St., Livonia, $750,000; 3.5 m.g. reservoir Michigan Avenue Station, Nankin. $250,000. Leroy Smith, county engr. CD 4/12.

▲ **Mich., St. Clair Shores**—City, D. J. Harm, city clk., 24800 Jefferson Ave., $1,005,000 bond election June 30, water sys., 4 m.g. reservoir, water mains. Claude Postiff, 1036 Majestic Bldg., Detroit, engr. CD 1/12/44.

O., Fairfield—Village, water sys. for 1,300 homes. $900,000.

Que., Joliette—City, City Hall, filter plant imprvs. $600,000. Guillaume Piette, 13 Place d'Aiguillon, Quebec City, consult. engr. CD 8/3.

SEWERS, WASTE DISPOSAL

▲ **Mo., Independence**—City, sewage plant, $2,000,000. CD 10/29/52.

▲ **W. Va., Wheeling**—Wheeling Sanitary Bd., City Hall, sewage treatment plant, 2 pumping stations, incl. clarifier digester, settling basins, cut chamber, Phase 2, 2,500,000 enlargement of existing storm and sanitary sewers. $2,500,000. Greeley & Hansen, 220 S. State St., Chicago, Ill., and W. O. McCluskey, Jr., 17 and Warren Sts., Wheeling, W. Va., consult. engrs. J. Boyd, city engr. CD 6/7.

BRIDGES

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Los Angeles Co.—4-lane railroad overhead and approaches Valley Blvd., FAS 852-4 1.9 mi., $750,000.

structures on portion of San Diego Freeway between Ohio Ave. and Waterford St., $900,000.

STREETS AND ROADS

▲ **Fla., Clearwater**—Bd. Comrs. Pinellas Co., Court House, Clearwater, highway loop from Honeymoon Isle to Mullet Key. $35,000,000.

▲ **IOWA**—State of Iowa, Ames,

298 mile toll road from Davenport to Council Bluffs. $180,000,000. Toll Road Authority will be appointed and revenue bonds issued.

▲ **Tex., Marshall**—City, city-wide street paving program, $600,000; new street widening program, $500,000.

▲† **WYOMING**—Bureau Public Roads, Dpt. Commerce, 18 and F Sts. N.W., Wash. 25, D. C.

Teton Co.—20 mi. highway from Moran to Moose, along east side of Teton National Park. $1,525,000.

EARTHWORK, WATERWAYS

Utah, Provo—Provo Water User's Assoc., Fisher Harris, mgr., 8 W. Center St., Power Plant 2; 2,500 kw generators at Deer Creek Reservoir. $900,000. CD 8/8/52.

LATIN AMERICA

▲ **Mexico, Mexico City**—ELECTRIC DISTR. LINES, etc.—Mexican Light & Power Co., Mexico City, imprv., exten. electric power distr. lines and facilities, $5,500,000; electric power plants expans. and imprvs. $2,500,000.

PUERTO RICO

▲ **Puerto Rico**—PLANT—Gonzalez Chemical Industries, Inc., San Juan, plans anhydrous ammonia plant at Guanica. $12,000,000.

PUBLIC BUILDINGS

Del., Dover—ARMORY—Delaware National Guard, 10 and Du Pont Sts., Wilmington, armory, $500,000.

▲† **D. C., Wash.**—ATOMIC ENERGY—General Services Admin., P. Bldgs. Service, General Services Bldg., Wash., D. C., Atomic Energy Bldg., in or near here. $10,000,000.

▲ **Idaho, Boise**—INDUSTRIAL ADMINISTRATION—State Dpt. P. Wks., Boise, plans by Hummel, Hummel & Jones, 1324 Idaho St., 2 story, rein.-con. industrial administration bldg. $1,000,000. CD 4/27.

▲ **Ill., Belleville**—SCHOOL—Belleville Twp. High School Dist., 201 Bd. Educ., Dr. Hal O. Hall, supt. Schools, 2600 W. Main St., $2,158,000 bond election June 4, township high school addns., imprvs. CD 4/19.

▲ **Mass., Amherst** — LIBRARY — State, Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, plans by Ames, Child & Graves, 50 Beacon St., Boston, U-803 library addn., University of Massachusetts, $2,000,000. CD 2/23/51.

Mich., Allegan—HOSPITAL—Bd. Supervs. Allegan Co., Court House, plans by J. & G. Daverman, 924 Grandville Ave. S.W., Grand Rapids, county hospital, $650,000.

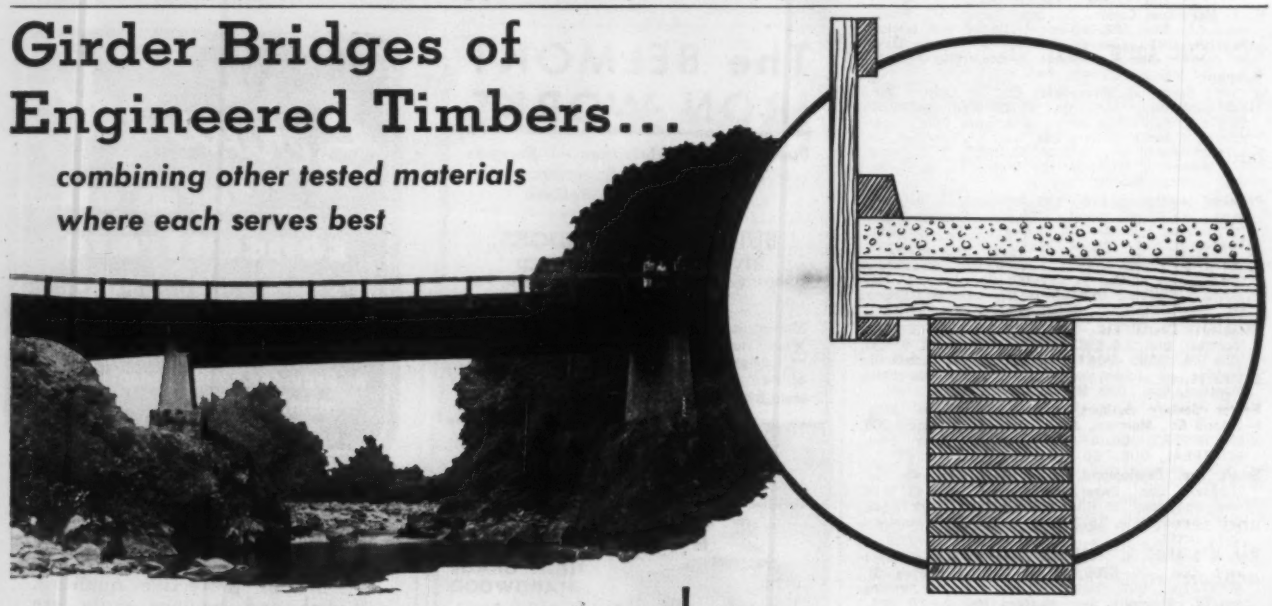
▲ **Mich., Ann Arbor**—STUDENTS ACTIVITIES—University of Michigan, W. K. Pierpont, vice pres. Bd. Regents, Service Bldg., plans by Swanson Assoc., East Long Lake Rd., Bloomfield Hills, students activities bldg., $1,500,000.

Mich., Jackson—SCHOOL—Bd. Educ., Northwest School Dist., voted $700,000 bond Apr. 27, Junior-Senior High School. CD 11/3.

(Continued on page 92)

Girder Bridges of Engineered Timbers...

combining other tested materials where each serves best



This bridge uses timber, steel and concrete each in its proper place, achieving a combination of permanence and economy impossible with other types of construction. From the top it looks like a concrete structure with timber wheel guards and hand rails. But beneath the concrete roadway are girders and decking of timber joined together with engineered steel connections. Economy of materials, combined with low engineering costs and speed of assembly and erection provide a low cost bridge with "muscle" for long, hard service. Details of engineered timber bridges are contained in the booklet, "Timber Bridges", which will be sent you upon request. See your nearest Timber Structures office, or write us direct.

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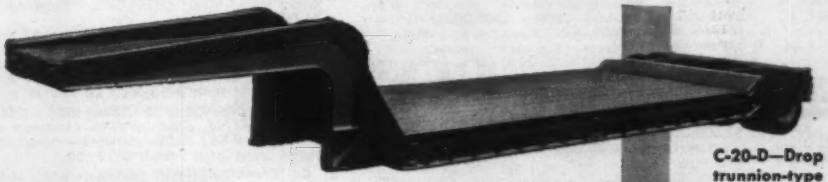
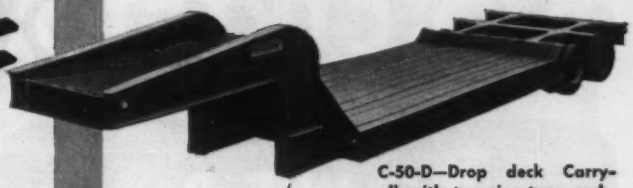


C-20-D—Drop deck Carryall with trunnion-type axles. For loads up to 20 tons.

BIG TOUGH, and DEPENDABLE

C-25-L—Level deck Carryall with tandem walking-beam. For loads up to 25 tons.



C-50-D—Drop deck Carryall with trunnion-type rocking beam. For loads up to 50 tons.

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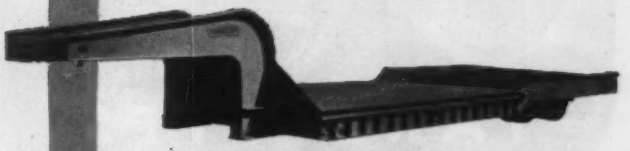

C-60-D—Drop deck Carryall with trunnion-type rocking beam. For loads up to 60 tons.

C-75-D—Drop deck Carryall with trunnion-type rocking beam. For loads up to 75 tons.

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ADDRESS_____

CITY_____ STATE_____

(Continued from page 90)

Mich., Traverse City—ADMINISTRATION—State, A. N. Langlus, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, plans by Swanson Assoc., East Long Lake Rd., Bloomfield Hills, admin. bldg., Traverse City State Hospital. $750,000.

Mich., Ypsilanti—DORMITORY—State, A. N. Langlus, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, plans by Swanson Assoc., East Long Lake Rd., Bloomfield Hills, student dormitories, $600,000; science bldg., $360,000, Michigan State Normal College. CD 1/28.

Minn., Deer River—SCHOOL—Bd. Educ., D. W. Thompson, supt., $400,000 bond election June 1, grade school, grade school, remodel existing bldg. $550,000. A. R. Melander, 603 Alworth Bldg., Duluth, archt. CD 4/27.

▲ Minn., Duluth—SCIENCE, etc.—University of Minnesota, Admin. Bldg., Minneapolis, science bldg. addn., $575,000; classroom bldg. addn., $800,000. Appropriation granted. CD 12/31/52.

▲ Minn., Minneapolis—SCHOOL OF MINES—Regents of University of Minnesota, Admin. Bldg., Minneapolis, School of Mines addn., $1,000,000; medical-dental-biological library, $400,000. Funds appropriated. CD 12/31/52.

▲ Minn., St. Paul—CHEMICAL and SOILS, etc.—Regerits of University of Minnesota, Admin. Bldg., Minneapolis, agricultural chemical and soils bldg., $900,000; dairy bldg. addn., $900,000; veterinary science bldg., $600,000. Funds appropriated. CD 12/31/52.

▲ Mont., Helena—CAPITOL BLDG.—State, Helena, reinforce walls and joints of state capitol bldg. $2,000,000. Morrison & Maierle, Helena, consult. engrs.

▲ O., Bowling Green—DORMITORY, etc.—Dpt. P. Wks., 705 Ohio Dpts. Bldg., Columbus, women's dormitory, $2,500,000; student union bldg., $2,435,984 and classroom bldg. $800,000 for Bowling Green State University.

O., Port Clinton—SCHOOL—Bd. Educ., Port Clinton, grade school on west side. $585,000. CD 10/26.

O., Youngstown—JAIL, etc.—Mahoning County Jail Bldg. Comn., c/o Mahoning Co. Comrs., Court House, plans by Schiebel & Shaffer, 1301 Realty Bldg., county jail and office, $900,000. CD 11/8.

Pa., Coudersport—SCHOOL—Coudersport Area Joint School, Coudersport, plans by Freeburg & Lindquist, 16 E. 4 St., Jamestown, N.Y., 1 story, brick, block grade School. $630,000.

▲ Pa., Morgan—SCHOOL—South Fayette Twp. School Dist., Morgan, plans by Joseph Hoover, 333 Blvd. Allies, Pittsburgh, 1 and 2 story brick, block school. $1,500,000.

▲ Pa., West Mifflin—SCHOOL—School Dist. of West Mifflin, West Mifflin, plans by Button & McClean, 119 E. Montgomery Ave., Pittsburgh, 1 and 2 story, brick, block, steel, Clara Barton Elementary School. $1,000,000.

R. I., Kingston—DORMITORIES—State F. A. Adams, purch agt., State House, plans by Harkness & Geddes, 726 Industrial Trust Bldg., Providence, two 3 story, 40x250 ft. brick, steel, concrete women's dormitories, University of R. I. $950,000. CD 7/27.

S. C., Greenville—SCHOOL—School Bd., J. F. Howard, 17 Westfield St., plans by J. M. Lineberger & Assoc., 3 W. Plaza St., Hollis Elementary School, addns. to Hollis Junior High School. $520,000.

S. C., Greenville—HIGH SCHOOL—School Bd., J. F. Howard, 17 Westfield St., Whitehouse High School. $550,000. J. E. Sirrine Co., 215 S. Main St., engr.-archt.

Tenn., Martin—RESIDENCE HALL—University of Tennessee, Knoxville, womens residence hall at Martin, branch of the University of Tennessee. $500,000.

▲ Tex., Sundeen — SCHOOLS — Sundeen Independent School Dist., Sundeen, plans by Lynn A. Evans & O. Roy Abbott, Bevly Bldg., Corpus Christi, 2 school addns., $400,000; Junior High School, $600,000. CD 2/9.

▲ Va., Richmond—BIOCLINICAL CENTRE, etc.—Medical College of Virginia, Dr. Wm. T. Sanger, pres., 1200 E. Broad St., plans by Baskerville & Son, 2313 W. Cary St., bioclinical center, $4,160,000; three dormitories and 32 efficiency apartments, $1,644,000. G. H. Rose, 403 N. 13 St., owner's archt. CD 12/18/52.

▲† Wash., Vancouver—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C. veterans hospital. $1,000,000.

Wyo., Cody—AUDITORIUM, etc.—School District No. 6, Cody, 1 story, 150x240 ft., brick auditorium and gymnasium. $750,000. Tresler & McCall, 1276 Sheridan Ave., engrs. CD 4/17/53.

▲ Que., Joliette—MENTAL HOSPITAL—Provincial Dpt. Health, Parliament Bldgs., Quebec City, plans by Pierre Rinfret, 1134 Chemin St. Louis, Sillery, Quebec City, 1,200-1,500 bed mental hospital. $15,000,000. CD 1/17.

COMMERCIAL BUILDINGS

▲ Calif., Palo Alto—HOUSING—Brown & Kaufmann, (Developer), 970 Oregon Ave., plans by Alexander Prentice, 370 Charleston Rd., 240 home subdivision. $4,000,000.

▲ Calif., Palo Alto—DORMITORIES—Regents of Stanford University, Stanford University, Palo Alto, plans by M. T. Pfleuger, 580 Market St., San Francisco, 7 girls' dormitories. $1,000,000. CD 4/8/53.

▲ Calif., Sacramento — HOME — Hitchcock Homes & Western Enterprises, 3384 El Camino Ave., 5,132 home subdivision on 1,160 acres. $75,000,000.

▲ Calif., Santa Venetia—HOMES—H. C. Billings, Jr., 626 Tamalpais Dr., Corte Madera, 175 home subdivision on Steton Ranch. $3,000,000.

Calif., Van Nuys—DWELLINGS—Corbin Investment Co., 8462 Sunset Blvd., Los Angeles, 58 frame, stucco dwellings, Boney, Friar and Calvert Sts. $650,000.

Calif., West Covina—DWELLINGS—Kauffman Homes, Inc., 2918 W. Compton Blvd., Gardena, plans by James R. Friend, Kress Bldg., Long Beach, 62 frame, stucco dwellings, Craig Dr., Merced St. and Truman Pl. $600,000.

Conn., Waterbury—CHURCH—St. Margaret's Roman Catholic Church, 289 Willow St., plans by Louis A. Walsh 11 West Main St., church $600,000. R. D. Kimball Co., 6 Beacon St., Boston, Mass., mech. engr.; Alfred Thomas, 12 Whitney Ave., New Haven, struc. engr. CD 12/27.

D. C., Wash.—OFFICE—National Rural Electric Cooperative Assoc., 1303 New Hampshire Ave. N.W., plans by Mills, Petticord & Mills, 3308 14 St. N.W., Wash., D. C., 8 story office, Florida and 20 Sts. N.W. $900,000.

▲ Fla., Daytona Beach—COLLEGE—Bethune-Cookman College, Daytona Beach, 10 new college buildings repairing 6 bldgs., construct stadium, (5 year program) $2,186,000. CD 9/14/53.

Mass., Boston—OFFICE and STORE—Trustees White Fund, Mayor's Office, City Hall, 6 story, combination office and stores, Boylston St. between Berkeley and Clarendon Sts., $900,000.

▲ Mich., Detroit—SHOPPING CENTER—Belmont Shopping Center, Inc., c/o Ben Agree, Inc., 1140 Book Bldg., shopping center, Eighth Mile Rd. and Dequindre St. $3,000,000.

▲ Mo., St. Louis—SHOPPING CENTER—Hampton Village Shopping Center, c/o G. J. Nooney & Co., mgr., 1221 Locust St., Zone 3, expansion of Hampton Village incl. large department store, bank, other shop structures incl. 50,000 sq. ft. sales space, Hampton Ave. and Chippewa St. $1,000,000.

Neb., Beatrice—HOSPITAL—Mennonite Hospital, Beatrice, plans by Davis & Wilson, 225 Stuart Bldg., Lincoln, hospital addn. $600,000. CD 10/6.

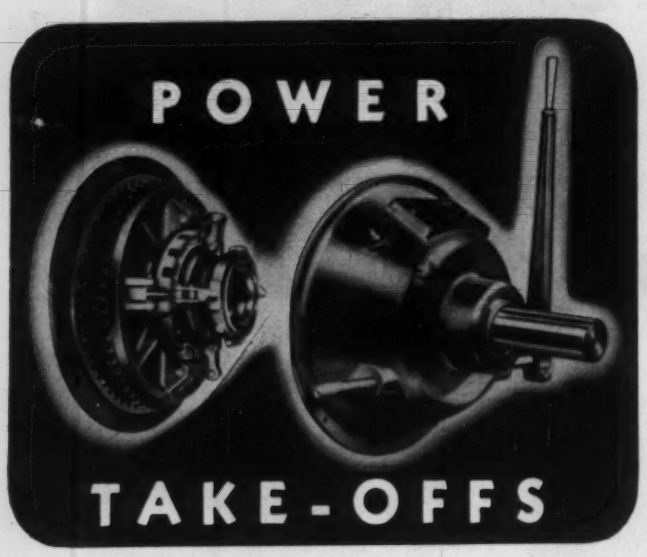
N. Y., Brooklyn—HOSPITAL LABORATORIES, etc.—Jewish Hospital of Brooklyn, Inc., 555 Prospect Pl., Zone 16, plans by Charles B. Meyers Assoc., 31 Union Sq., New York, Zone 3, laboratories and research quarters alterations, 492-522 St. Marks Ave. $700,000.

N. Y., Brooklyn—APARTMENT—Mayfred Realty Corp., 400 Lafayette St., New York, plans by Morris Rothstein & Sons, 186 Joralemon St., Zone 2, 6 story apartment, 70 E. 8th St., $550,000.

▲ N. Y., New York—UNIVERSITY CAMPUS—Fordham University, Fordham Rd., University Campus on two-block site incl. School of Law, Graduate School of Social Service, Graduate School, Education and a division of School of Business in area north of Columbus Circle. $1,000,000. Site changed. CD 11/11.

N. Y., New York—APARTMENT—Irion, Inc., 61 Broadway, Zone 6, plans by H. I. Feldman, 415 Lexington

ROCKFORD



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CLUTCHES

Ave., Zone 17, 10 story apartment, 209-223 E. 53 St. $590,000.

N. Y., New York—DORMITORY—Manhattan College, Manhattan College Parkway and 242 St., plans by Eggers & Higgins, 100 E. 42 St., Zone 17, 4 story dormitory to house 182 students, west side, Riverdale Campus, near Manhattan College Parkway. $725,000.

▲ N. Y., New York—APARTMENT—Second Gotham Corp., c/o A. Rollin Caughey, archt., 165 E. 72 St. Zone 21, 16 story apartment, 430 E. 79 St. $1,900,000.

▲ N. Y., New York—TRANSPORTATION, SHOPPING and OFFICE CENTER—Syndicate, c/o Powers & Kessler, archt., 270 Park Ave., Zone 17, transportation, shopping and office center, 78-acre site over New York Central and New York New Haven & Hartford R.R. yards bounded by Sheridan Ave., Grand Concourse, Park Ave., Morris Ave., 161 St. and 138 St. $10,000,000.

O., Toledo—HOSPITAL—Bd. Trustees Riverside Hospital, 1609 Summit St., modernize hospital and build 4-story wing and 1 story addn., Stickney Ave. $900,000. CD 3/18/53.

Pa., Phila.—HOME FOR AGED—Sacred Heart Manor, 6445 Germantown St., plans by Stickle Assocs., 125 City Line Ave., Bala Cynwyd, home for the aged. $670,000.

▲ Tex., Dallas—SHOPPING CENTER—Casa View Village Shopping Center (Lone Star Life Co.—parent owners) 4641 Greenville St., 70,000 sq. ft. existing shopping center addn. $1,000,000.

▲ Tex., Freeport—STORE UNITS—Freeport Land Co., c/o Dan. M. Moody, Abstract & Title Bldg., Houston, addnl. integrated store units in area of 9-acre Tarpon Inn Village, $1,500,000; 3 integrated stores unit, on 9-acre tract, Tarpon Inn Village, $385,000.

▲ Tex., Houston—DWELLINGS, etc.—Briargrove Land Co., c/o R. L. Phillips & D. F. Biven, Almeda-Genoa Rds., Unit 1, 15 masonry dwellings, $385,750; Unit 2, 12 dwellings, $377,775; Unit 3, 9 dwellings, $355,000; Unit 4, 20 dwellings, $420,125; Unit 5, 18 dwellings, $378,500; Unit 6, 10 dwellings, $367,500; shopping center to occupy 12-acre plot, $750,000.

▲ Tex., Houston—MERCANTILE—Foley's, 1110 Main St., plans by Kenneth Franzheim, 802 Lovett St., 4 story (upper) addn. to existing 6 story mercantile, making total 10 stories. $2,000,000. CD 4/19.

Utah, Provo—HOSPITAL REMODELING, etc.—L. D. S. Church, 47 E. South Temple St., Salt Lake City, plans by Willard C. Nelson, Box 704, 64 N. 1 St. E., Provo, remodeling and addns. to Utah Valley Hospital. $700,000.

▲ Utah, Sunset—DWELLINGS—Suburban Homes & Development Corp., Ogden, 95 homes in Buena Vista Sub-division. $1,800,000.

▲ Wis., Cudahy—HOSPITAL—Trinity Memorial Hospital Assn., 4728 S. Packard Ave., Milwaukee, plans by Grassold-Johnson & Assocs., 734 N. Jefferson St., Milwaukee, Zone 2, 3 story, 75-bed hospital. $1,300,000. CD 12/4/51, under Wis., South Milwaukee.

Que., La Tuque—HOUSES—Les Immeubles Radisson Ltd., 203 Radisson St., Three Rivers, 100 wood, brick, concrete houses, $800,000.

▲ Ont., London—SHOPPING CENTER, etc.—Ridout Real Estate Ltd., 46 Bloor St. W., Toronto, plans by C. B. Dolphin, 880 Bay St., Toronto, shopping center and office, York St. $6,000,000.

▲ Que., Montreal—OFFICE—Fremour Investment, c/o Greenspoon, Freedlander & Dunne, archts., 4151 Sherbrooke St. W., 12 story, 12,000 sq. ft. concrete, steel office. $3,000,000. J. P. Keith Assoc., 3935 Clanranald Ave., Montreal, mech. and electrical engrs. P. Dallemagne, 3180 Van Horne St., structural engr.

INDUSTRIAL BUILDINGS

▲ Ala., Birmingham—PLANT—Southeastern Metals Co., 3925 N. 29 St., Birmingham, cold rolled div. to produce light structural steel sections, channels and angles, $1,000,000.

▲ Ala., Gadsden — PLANT — Allis-Chalmers Co., 1953 Thomas St., Milwaukee, Wis., plant expansion. $1,000,000.

Calif., San Francisco—PARKING GARAGE—Standard Oil of California, 225 Bush St., plans by Aushin & Allen, 461 Bush St., 5-level parking garage, $600,000.

Ga., Atlanta—GARAGE—Roy Livingston 88 Cone St. N. W., plans by Wilner & Milkey, 761 Peachtree St. N. W. 1,200-car garage to be known as Hurt Park Garage 33, on Exchange Place, $750,000.

▲ Ky., Louisville—PARKING GARAGE—Commonwealth Life Insurance Co., 110 S. 5 St., plans by Nevin & Morgan, Starks Bldg., 4 or 5 story parking garage, 413 W. Broadway. $1,500,000. CD 2/20/53, under J. Graham Brown, as owner.

▲ Miss., Vicksburg—PLANT—Spencer Chemical Co., 610 Dwight Bldg., Kansas City 5, Mo., plant to mfg. nitric acid and ammoniating solutions. $1,500,000.

▲ Mont., Butte—DISTRIBUTION CENTER—Safeway Stores, Inc., Fourth and Jackson Sts., Oakland, Calif., plans by Baxter Warehouse Service & Constr. Co., subsidiary of Safeway Stores, Inc., Fourth and Jackson Sts., Oakland, Calif., distribution center, $4,000,000. CD 4/15.

O., New Phila.—FACTORY, etc.—Joy Mfg. Co., 338 S. Broadway, 2 story factory, office. $800,000.

▲ O. Toledo—PARKING GARAGE—Tiedtke's Department Store, 408 Summit St., 4 level unit for 800 car parking garage, Adams St., $1,000,000.

▲ O., Youngstown—WAREHOUSE—Tamarkin Co., 102 Fifth St., 1 story, 100,000 sq. ft. wholesale grocery warehouse, N. Meridian Rd. $1,000,000.

Okla., Bartlesville—LABORATORY—Phillips Petroleum Co., Bartlesville, chemical research laboratory. $500,000. C. W. Hubbell, c/o owner, engr.

▲ Pa., Bessemer—ROTARY KILN—Bessemer Limestone & Cement Co., Wick Bldg., Youngstown, O., 12 x 450 ft. rotary kiln, addnl. raw grinding facilities, dust-collecting sys., increased finished cement storage facilities. $3,600,000.

▲ Pa., Phila.—WAREHOUSE, etc.—General Electric Co., 2925 N. Broad St., plans by The Ballinger Co., 121 N. Broad St., warehouse and office. $1,500,000.

▲ Tex., Houston—PLANT, etc.—Shell Oil Co., Shell Bldg., addn. of 16,000 bbl. daily capacity Catalytic Platforming unit, $2,750,000; constr. hydrodesulfurization unit, $1,750,000; boiler plant expansion and imprvs., $400,000; erecting four 250,000 bbl. steel oil storage tanks, $275,000, on Ship Channel. CD 10/11/51.

Tex., Houston—WAREHOUSE—Damon Wells, 2107 McKinney St., plans by Josh Tillinghast, 3207 Montrose St., 1 story, 120,000 sq. ft., rein.-conc., steel warehouse, Canal, Delano and Ennis Sts. $550,000. Walter P. Moore, 2 Pinedale St., consult. engr.

▲ Tex., Pasadena—PLANT—Phillips Chemical Co., Adams Terminal, Houston, polyethylene plant, $15,000,000; pipe line to connect polyethylene plant at Pasadena to ethylene plant at Sweeny, $375,000. CD 5/3.

▲ Tex., Sweeny—PLANT—Phillips Chemical Co., Adams Terminal, Houston, 145,000,000 lb. annual capacity ethylene plant. $10,000,000. CD 5/3.

UNCLASSIFIED

Ga., Statesboro—GAS SYSTEM—City, City Hall, municipal natural gas sys. $775,000. Barnard & Burk Engineers, 1023 Nicholson Dr., Baton Rouge, La. engrs.

Mississippi—RURAL DISTRIBUTION LINES—Dixie Electric Power Assn., Laurel, 92 mi. rural distr. lines, addnl. sub-station, facilities, sys. imprvs., Jones Co. $560,000.

West Virginia and Kentucky—GAS WELLS—United Fuel Gas Co., 1038 Quarrier St., Charleston, W. Va., drilling 19 test gas wells on 123,800-acres undeveloped gas leases, Mingo County, West Virginia and Leslie, Clay, Breahitt and Pike Counties in Kentucky. $614,000. CD 5/3/54.

▲ Ont., Toronto—STADIUM BOWL—Canadian National Exhibition Assn., Exhibition Park, Toronto, converting grandstand into stadium bowl. $3,000,000. CD 8/4/53.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 26 Massachusetts
STREETS AND ROADS
May 17 Massachusetts May 20, 27 Vermont

† **Me., Portsmouth**—HYDRANT REFUELING SYSTEM—BA 6/3—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., hydrant refueling sys., 5 pump houses, underground storage tanks, 15 control pits, 5 manifold pits, 75 outlets refueling system valves, roadways, Air Force Base, ENG-19-016-55-138. $750,000-$1,000,000. Plans deposit $10, refundable. Hayden, Harding & Buchanan, 810 Park Square Bldg., Boston, Mass., engrs.

† **Me., Brunswick**—ORDNANCE FACILITIES—BA 6/8—First Naval Dist., 495 Summer St., Boston, Mass., ordnance facilities Naval Air Station, NOY 79823, Spec. 38334, $500,000. Plans deposit $40, W. Chester Browne & Assoc., 184 Boylston St., Boston, Mass., archts. CD 10/6/53.

BIDS ASKED—BUILDINGS

Mass., Monson—INFIRMARY—BA 5/26—State, Dpt. P. Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, M-507 infirmary, State Hospital, $885,000. Plans deposit $50, refundable, Cram & Ferguson, 248 Boylston St., Boston, archts. CD 7/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dept. P. Wks., 100 Nashua St., Boston,
Mass.—**Campanella & Cardi Constr. Co.**, 380 Jefferson Blvd., Warwick, R. I. LB **$1,567,220.** hy. and bridge F-328 (5), Dennis, Harwich and Brewster.
Mass.—**J. F. White Contg. Co.**, 201 Alewife Brook Parkway, Cambridge, Mass. and **Consolidated Constr. Co.**, 106 E. Dedham St., Boston, Mass. (joint venture) LB **$1,486,065.** hy. and bridge U 229 (9), Canton, Dedham and Westwood. Bids May. 10. CD 4/25.

▲† **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. LB **$3,878,324**, reconstr. Marginal Pier No. 11, NOY 85264, Spec. 43308, BOSTON, MASS., First Naval Dist., 495 Summer St., Boston, Mass. Bids May 10. CD 5/4.

BUILDINGS

LOW BIDS AND CONTRACTS

James S. Kelliher, 1245 Hancock St., Quincy, Mass. CA **$966,240.** JUNIOR HIGH SCHOOL, off Peach St., South Braintree, BRAINTREE, MASS. Town, South District, School Development Comn., c/o supt. Schools, 10 Tremont St., Braintree, Mass. CD 4/12, under LB.

Lilly Constr. Co., 122 Hampshire St., Cambridge, Mass. CA Approx. **$600,000**, est. $500,000-$600,000, SYNAGOGUE addn., alterations, Humphrey St., SWAMPSCOTT, MASS.,Temple Israel, 837 Humphrey St., Swampscott, Mass. CD 4/1, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 31 New Jersey

BIDS ASKED—BUILDINGS

▲ **Pa., Wernersville**—BOILER PLANT—BA 6/8—General State Auth., 18 and Herr Sts., Harrisburg, replace boiler plant and revamp atnd imprv. electrical distr. sys. Wernersville State Hospital. $1,200,000. Plans deposit $15. Gilbert Associates, 607 Washington St., Reading, engr. CD 12/24/53.

▲ **Md., Hagerstown**—SCHOOL—BA 6/16—Bd. Educ., Washington Co., high school, $2,500,000. Plans deposit $40, McLeod & Ferrara, 1741 DeSales St. N.W., Wash., D. C., archts. CD 11/21/52.

▲† **N. J., Fort Monmouth**—HOSPITAL—BA 6/23—U. S. Eng., 111 E. 16 St., New York 3, N. Y. 100-200 bed hospital with boiler house, ENG 467. Plans deposit $100. Extended date. CD 5/3.

Pa., Phila.—BAKERY—Bids Asked—Tasty Baking Co., 2801 Hunting Park Ave., bakery bldg. addn. $650,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **B. Perini & Sons, Inc.**, 73 Montwait Ave., Framingham, Mass., **Walsh Constr. Co.**, 122 E. 42 St., New York, N. Y., **Morrison-Knudsen Co., Inc.**, 122 E. 42 St., New York, N. Y., **Peter Kiewit Sons Co.**, 1024 Omaha Natl Bank Bldg., Omaha, Neb. and **Utah Constr. Co.**, 144 E. Broadway, New York, N. Y. CA **$35,849,000** constr. Barnhart Island Power Plant near Massena St. Lawrence Co., Spec. PA 4-11001 St. Lawrence Contr. No. 9, NEW YORK, The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Apr. 15. CD 4/19, under LB.

† **Arthur Venneri Co.**, 300 N. Avenue East, Westfield, N. J. CA **$979,860.** officers' club and mess BOQ's FYY 55, Plattsburgh Air Force Base, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 3/31, under LB.

† **Michael Contr. Co.**, 142 19 St., Brooklyn 32, N. Y. CA **$658,205.** addnl., rehabilitation (Phase 1) Plattsburgh Air Force Base, ENG-30-075-55-417, PLATTSBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 5/3, under LB.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
rejected bids May 10, Contract GR3, preparation of slopes and misc. work at 11 bridge structures along N. J. Turnpike, Essex, Union and Middlesex Counties. Will re-advertise. CD 4/25.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Admin. Bldg., New Brunswick,
Franklin Contg. Co., 12 Central Ave., Newark, N. J., CA **$3,357,144**, Contract PE-4, 9 bridge structures on Pennsylvania exten. of N. J. Turnpike, Burlington Co. Bids Apr. 20, awarded May 10. CD 4/22, under LB.

▲ **NEW JERSEY**—New Jersey Tunrpike Auth., Administration Bldg., New Brunswick,
Kingston Bituminous Products Co., Kingston, N. J., CA **$2,585,614**, Contract PE-5, roadway pavement shoulders, guard rail, right-of-way fencing, topsoiling and seeding on Pennsylvania exten. of N. J. Turnpike from existing turnpike to Delaware River, Burlington Co. Bids Apr. 8, awarded May 10. CD 4/22, under LB.

Allen N. Spooner & Sons, 143 Liberty St., New York 6, N. Y., CA **$929,929**, rehabilitation and widening substructure of Pier No. 3, Hoboken-Port Authority Piers, Contract HP 120.007, HOBOKEN, N. J. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Apr. 19. CD 4/22, under LB.

▲† **B. J. Lucarelli & Co., Inc.**, 22 Orchard St., Jersey City, N. J., CA, **$1,206,337**, hangar, storage facilities, shops, McGuire Air Force Base, ENG-36-109-55-64, WRIGHTSTOWN, N. J. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Apr. 22, awarded May 3. CD 5/6, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Bero Constr. Corp., 259 Delaware Ave., Buffalo 2, N. Y. CA **$1,171,699.** constr. 42,491 ft. rein.-con. road variable in width, divided hy., T. R. 5, North East Twp., Erie Co. Bids Apr. 15, awarded May 6. CD 4/20 under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
rejected bids Jan. 7, constr. 3.783 ft. rein.-con. hy. variable in width on Carson St. and substructure for approach to Fort Pitt Bridge, T. R. 22-30-837, Pittsburgh, Allegheny Co. LB **$1,276,532**, Will re-advertise. CD 1/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Benderson Development Co., 28 Wasson St., Buffalo, N. Y., Own Forces, **$500,000** 3 story, 35,000 sq. ft., steel, brick, concrete office, 625 Delaware Ave., BUFFALO, N. Y. Jack Jushin, 1487 Hertel Ave., Buffalo, N. Y., archt.-engr. CD 5/12.

▲ **John A. Johnson & Sons, Inc.**, 303 41 St., Brooklyn, 32, N.Y. CA **$5,876,950.** general constr. for Washington HOUSES Proj. (No. NY-5-14) Sect. II, incl. Bldgs. Nos. 7 to 14 (inclusive) in area bounded by E. 104 St. 2 Ave., E. 100 St., E. 99 St., and 3 Ave., Manhattan Boro, NEW YORK, N.Y. New York City Housing Auth., 299 Broadway, New York 7, N.Y. Bids Mar. 22, awarded May 2, CD 3/24, under LB;
J. L. Murphy, Inc., 340 E. 44 St., New York 17, N.Y. CA **$678,000.** plumbing contract (NYCHA).

▲ **Fair Oaks Homes**, c/o Sterling M. Palm, archt., 110-01 63 Drive, Forest Hills, N.Y. Owner Builds. **$1,000,000.** 50 HOUSES on tract on Miller Rd. west of South Oyster Rd., SYOSSET, N.Y.

▲ **Woodbridge Knolls Homes**, c/o Jacobson & Goldfarb, 290 Hobard St., Perth Amboy, N.J. Owner Builds, **$3,000,000**, 217 HOUSES on tract on West Lake Ave., COLONIA, N.J.

▲ **Joleedan Constr. Co.**, att. D. Leeds, Route 27, Madison Twp., N.J., Separate Contracts, **$2,800,000.** RESIDENTIAL DEVELOPMENT, Delaware Twp., ERLTON, N.J. W. W. Vanderclute, 8 South Ave., West Cranford, N.J., archt.

▲† **Charles Simkins & Sons, Inc.**, P.O. Box 110, Perth Amboy, N. J., CA, **$2,778,183**, 120 BARRACKS rehabilitation and alterations, ENG-109-55-71, FORT DIX, N. J. U. S. Eng., 2653 E. Abbottsford Rd., Phila., Pa. Bids Apr. 26. CD 5/6, under LB.

Mariani Constr. Co., 6922 Roosevelt Blvd., Phila., Pa., Separate Contracts **$750,000**, RESIDENTIAL DEVELOPMENT, Verree and Red Lion Rds., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **Summitt Constr. Co.**, 119 W. 57 St., New York, N. Y. Separate Contracts, **$20,000,000** 12 APARTMENTS, SHOPPING CENTER and RESIDENCES, Willow Grove Ave., etc., PHILA., PA.

▲ **Henry Berman**, 6032 Market St., Phila., Pa., Separate Contracts, **$2,600,000.** RESIDENTIAL DEVELOPMENT, Wheeler St., etc., PHILA., PA.

▲ **Whitewood Homes, Inc.**, 8020 York Rd., Elkins Park, Pa., Separate Contracts, **$1,430,000.** RESIDENTIAL DEVELOPMENT, Newtown Rd., WARMINSTER, PA. Sherwin Rochles, 5664 Diamond St., Phila., Pa., archt.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 24 West Virginia May 27 Alabama
May 31 Florida
STREETS AND ROADS
May 24 West Virginia May 25 Louisiana
May 27 Alabama

▲† **Alabama**—BA 6/15—U. S. Eng., P.O. Box 1169, Mobile, Zone 7, lock and appurtenances for new Warrior Lock and Dam on Warrior River about 6 mi. southeast of Eutaw. CD 8/25.

BIDS ASKED—BUILDINGS

Ga., Atlanta—TRAFFIC COURT—BA 5/30—City, Council Chamber, Traffic Court Bldg. $500,000. Plans deposit $25. Robert & Co. Assocs., 96 Poplar St. archts.-engrs. CD 7/23.

▲ **Va., Marion**—MAXIMUM SECURITY—BA 6/7—Commonwealth of Va., State Hospital Bd., Dr. J. E. Barrett, dir., 117 N. Ballard St., Richmond, maximum security bldg. for criminal insane at Southwestern State Hospital. $1,300,000. Plans deposit $30. Euband & Caldwell, Boxley Bldg. Roanoke, archts. CD 8/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Blythe Brothers Co., Inc., 2911 Hutchinson Ave., Charlotte, N. C., LB **$783,573**, sanitary sewerage imprvs., WINSTON-SALEM, N. C. City, City Hall, Winston-Salem, N. C. Bids Apr. 28. CD 4/11.

▲ **GEORGIA**—State Hy. Dpt., Captiol Sq., Atlanta, Ga.—**Southeastern Highway Contg. Co.**, Gainesville, Ga. LB **$127,981**, grading, paving 4.478 mi. FAS Route 861, S 0861 (1) Cherokee and Pickens Counties;
Ga.—**J. Nick Jordan**, 1296 Sylvan Rd. S.W., Atlanta, Ga. LB **$251,243**, grading, paving U.S. Route 41-E, Proj. D-AD-F (6) (2), Cobb Co.;
Ga.—**Ledbetter-Johnson Co.**, Rome, Ga., LB, **$84,260** grading, paving FAS Route 1557, Proj. S-1557 (1) Dade Co.;
Ga.—**D. W. Bailey**, Jackson, Ga., LB, **$237,487**, grading, paving 6.503 mi. State Route 166, Fed. Aid Sec. Proj. S-0841 (2), Contract 1, Douglas Co.;
Ga.—**Hugh Steele Constr. Co.**, Centre, Ala., LB **$902,955.** grading, paving, 2 bridges 12.636 mi. State Route 87, Monroe and Butts Counties. Bids May 6. CD 4/28.

▲† **T. L. James & Co.**, Ruston, La. and **W. R. Aldrich & Co.**, Box 1751, Baton Rouge, La. CA **$2,581,051.** Schedule B airfield paving, Alexandria Air Force Base, Inv. 55-52, ALEXANDRIA, LA. U.S. Eng., Box 867, Little Rock, Ark. CD 5/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The Lummus Co.**, 385 Madison Ave., New York, N.Y., CA, Total est. **$25,000,000**, design and construct delayed-coking unit at new REFINERY at HORNSBYVILLE, VA. American Oil Co., 122 E. 42 St. New York 17, N.Y. CD 3/31, under CA.

W. B. Johns, Tifton, Ga., LB $768,000. SCHOOLS, VALDOSTA, GA. State School Bldg. Auth., 41 Exchange Pl. S. E., Atlanta, Ga. Bids Apr. 28.

▲ **Johns Builders & Development Co.**, 3601 S. Manhattan Ave., Tampa, Fla Owner Builds. **$7,100,000.** 500 HOMES in Temple Terrace Riverside section, TAMPA, FLA

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville, Ky. CA Est. **$1,500,000.** 5 story OFFICE addn., LOUISVILLE, KY. Southern Bell Telephone & Telegraph Co., Sixth and Chestnut Sts., Louisville, Ky. Bids Mar. 15. CD 2/23.

▲ **The Girdler Co.**, 224 E. Broadway, Louisville, Ky. CA **$2,500,000.** general contract rubber and latex PLANT expansion, LOUISVILLE, KY. B. F. Goodrich Chemical Co., 100 W. Broadway, Louisville, Ky.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 25 Michigan

BIDS ASKED—BUILDINGS

Wis., Appleton—DORMITORY—BA 5/24—Lawrence College, 112 S. Union St., 3 and 4 story, 198x220 ft. womens' dormitory, $900,000. F. C. Shattuck, 174 E. N. Water St., Neenah, archt. CD 12/17.

▲ **Ind., Hammond**—HOSPITAL—BA 5/26—St. Margaret's Hospital, Douglas and State Line Ave., hospital addn. $1,000,000. Bachman & Bertram, 5116 Hohman Ave., archts. CD 4/1.

O., Cincinnati—CHURCH—BA 5/27—Christ the King Church, 3223 Linwood Rd., 1 story, bsmnt., brick, stone church, $500,000. Plans deposit $25. E. J. Schulte, 207 Paramount Theater Bldg., archt. Bodenstein & Schuster, 9 and Main Sts., engrs. CD 4/4.

(Continued on page 96)

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(Continued from page 94)

Wis., Manitowoc—SCHOOL—BA 6/2—Bd. Educ., 1514 S. 14 St., Lincoln High School addn., renovation. $920,000. Plans deposit $100. Childs & Smith, 20 N. Wacker Dr., Chicago 6, Ill., archts. CD 12/22.

▲ Mich., Wayne—HOSPITAL—BA 6/20—Peoples Community Hospital Auth., 35166 Michigan Ave., Wayne area hospital Annapolis and Venoy Sts. $2,000,000. Plans deposit $40 each for general, mechanical, electrical., $25 for elevator and dumbwaiter. Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts. CD 10/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ INDIANA—Indiana Toll Road Comm., 309 W. Washington St., Indianapolis, Zone 4,

Winkleman Constr. Co. & A. L. Dougherty, Guaranty Bldg., Indianapolis, Ind., CA $6,762,531. Contracts 1 and 2, Indiana East-West Toll Road, Lake Co. Bids Apr. 20, awarded Apr. 28. CD 4/29, under LB.

▲† Great Lakes Dredge & Dock Co., 122 S. Western St., Chicago 3, Ill., LB $1,197,430, breakwater reconstr. and addn., Indiana Harbor, East Chicago, INDIANA. U. S. Eng., Merchandise Mart, Chicago 54, Ill.

▲ Thomas Noland & Hughes, 4017 South Brook St. Louisville, Ky., CA, $2,125,772, sewerage sys. Div. 1, sanitary sewers, pumping station, storm sewers, INDIANAPOLIS, IND. Ben Davis Conservancy Dist., L. E. Caldwell, pres., 4808 W. Washington St., Indianapolis, Ind. Bids Mar. 7. CD 4/1, under LB.

ILLINOIS—State Div. Hys., Springfield,

J. D. Barter Constr. Co., 215 S. Jackson St., Harrisburg, Ill. and E. T. Simonds, Box 356 Carbondale, Ill., CA, $818,636, c. conc. 2.45 mi. Ill.; 13 Gallatin Co. Bids Feb. 25, awarded May 10. CD 3/2, under LB.

Des Plaines Constr. Co., 1032 Lee St., Des Plaines, Ill., CA $540,200, sewage treatment plant and sanitary sewers, WHEELING, ILL. Village, Village Hall, Wheeling, Ill. De Soto B. McCabe, 8340 Grand Ave., River Grove, Ill., engr. Awarded May 2.

▲WISCONSIN—State Hy. Comn., Madison,

Wis.—Speedway Constr. Co., 6001 N. 91 St., Milwaukee, Wis., LB $573,746, Contract 1, grading, ballast, base course 9.815 mi. S. T. Hy. 57, Proj. F 02-3 (15) Sheboygan Co.; LB $232,113, Contract 1, base, c. conc. 0.81 mi. S. T. Hy. 59, Proj. U 6702 (1) Waukesha Co.; LB $183,370 Contract 1, base, b. conc. 2.438 mi. S. T. Hy. 174, Proj. T 0844 (2), Kenosha Co.;

Wis.—Bushman Constr. Co., 4635 Wyandotte St., Kansas City, Mo., LB $239,293, Contract 1, c. conc. 4.45 mi. U. S. Hy. 45, Proj. 058-1 (16), Kenosha Co.; LB $80,964 Contract 2, base course 8.261 mi. S. T. Hys. 22 and 33, Proj. S 027-2 (5) and T 035-1 (4), Columbia Co.;

Wis.—Phillip C. Kaiser, Portage, Wis., LB $334,656 Contract 1, grading, structures 8.261 mi. S. T. Hys. 22 and 33, Proj S 0272 (5) and T 035-1 (4), Columbia Co.;

Wis.—S. J. Groves & Sons Co., Westley Temple Bldg., Minneapolis, Minn., LB, $1,008,422, Contract 1, grading, base 6.92 mi. U. S. Hys. 18 and 151, Proj F 017-2 (12) Dane Co.;

Wis.—Thronson Constr. Co., Madison, Wis., LB, $598,340 Contract 2, grading, base 2.965 mi. U. S. Hys. 18 and 151, Proj F 017-2 (12, Dane Co.;

Wis.—Adolph Cherney & Victor Beman, Maribel, Wis., LB, $253,520, Contract 1, grade. ballast, base course, 2.232 mi. Proj F 035-2 (6), Manitowoc Co.;

Wis.—R. B. Vickery Co., Sumico, Wis., LB, $197,842 Contract 1, grading, base course 1.835 mi. S. T. Hy. 42, Proj T 01-5 (10), T 01-5 (12) and T 01-5 (11) Door Co.;

Wis.—Peterson & Koshak, Medford, Wis., LB $596,452 Contract 1, ballast, base course 9.983 mi. U. S. Hy. 51, Proj. F 05-4 (33) and F 04-4 (36), Iron and Vilas Counties;

Wis.—Kluck Constr. Co., Inc., Stevens Point, Wis., LB $175,589, Contract 1, grading, ballast 4.2 mi. S. T. Hy. 111, Proj S 0280 (1) Price Co.;

Wis.—Fletcher Constr. Co., Menomonie, Wis., LB, $243,407 Contract 1, ballast and base course 5.775 mi. S. T. Hy. 112, Proj S 0242 (3), Ashland Co.;

Wis.—L. G. Arnold, Inc., 201½ N. Dewey St., Eau Claire, Wis., LB $347,999. Contract 1, grading, base course 2.166 mi. S. T. Hy. 9, Crawford Co.;

Wis.—The White Constr. Co., 710 N. Plankinton Ave., Milwaukee, Wis., LB, $528,419, Contract 1, conc. base, b. conc. 1.416 mi. S. T. Hy. 59, Proj F-5705 (3), Milwaukee Co.;

Wis.—Schneider-Borchert Co., 606 W. Wisconsin St., Milwaukee, Wis., LB, $327,137, Contract 1, c. conc. base and b. conc. 0.886 mi. S. T. Hys. 59 and 15, Proj F 5705 (4) and 5704 (3), Milwaukee Co.;

Wis.—Badger Constr. Co., 229 E. Wisconsin St., Milwaukee, Wis., LB, $255,706, Contract 1, c. conc. base, b. conc. 073 mi. S. T. Hy. 62, Proj T 5724 (1), Milwaukee Co.;

Wis.—Lee H. Parker, 2015 N. Richmond St., Appleton, Wis., LB $82,380. Contract 1, c. conc. base course 07.03 mi. U. S. Hy. 41, Proj T 02-5 (13), Marinette Co.; LB $302,805, Contract 1, base, c. conc. 1.006 mi. S. T. Hy. 175, Proj U 5906 (3), Winnebago Co.;

Wis.—Reliance Constr. Co., 1011 S. 8 St., Sheboygan, Wis., LB, $289,021. Contract 1, b. conc. 12,189 Mi. S. T. Hy. 57, Proj T 02-3 (14) and T 02-4 (10) Sheboygan and Manitowc Counties;

Wis.—Universal Engr. Co., Medford, Wis., LB, $103,500 Contract 1, base, b. conc. 0.857 mi. S. T. Hys. 35, 64, and 65, Proj T 011-1 (9) and T 0171 (3) and T 028-2 (8), St. Croix Co. Bids May 10, CD 4/21. 16/19/55.

BUILDINGS

LOW BIDS AND CONTRACTS

Westbrook Homes, Inc., 3349 Harrison Ave., Cincinnati, O. Owner Builds. $925,000. 42 one story, brick bsmnt. HOMES off Flemming Rd., near Winton Rd., CINCINNATI, O. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr. Awarded May 5.

▲ Fluor Corp. Ltd., 2500 Atlantic St., Los Angeles, Calif., CA, $2,000,000. 11,000 bbls. per day ultraformer unit at Sohio No. 1 REFINERY, CLEVELAND, O. Standard Oil Co. of Ohio, Midland Bldg., Cleveland, O. CD 7/8/53.

Frank Messer & Sons, Inc., 4612 Paddock St., Cincinnati, O. CA $996,400. general constr. 11 story women's DORMITORY, on southeast portion of Ohio State University Campus, 350-unit bldg. between 11 and 12 Aves., COLUMBUS, O. Ohio Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Awarded May 9. CD 9/21

Frank Messer & Sons, Inc., 4612 Paddock Rd., Cincinnati, O., LB, $779,000, new SCHOOL bldg. and addns., OXFORD, O. Oxford-Hanover School Dist., (Talawanda) Oxford, O. Bids May 4. CD 4/27.

Peter Becker, 602 Detroit St., Hammond, Ind., CA, $531,000, SCHOOL, HAMMOND, IND. St. Casimir Parish, Johnson St. and Cameron Ave., Hammond, Ind. Bids Apr. 25, awarded Apr. 28. CD 4/5.

▲ Bechtel Corp., 220 Bush St., San Francisco, Calif. and General Electric Co., River Rd., Schenectady, N.Y., CA, $45,000,000, 180,000 kw. ATOMIC POWER PLANT with nuclear reactor of water boiling type, and transmission facilities in Grundy County at confleunce of Kankakee and Des Moines Rivers, ILLINOIS. Commonwealth Edison Co., 72 Adams St. Chicago 90, Ill. Bechtel Corp., 200 Bush St. San Francisco, Calif., engrs. Project is subject to AEC approval. Nuclear Power Group, Inc. (Bechtel Corp., American Gas & Electric Service Corp., 30 Church St., New York 8, N.Y., Commonwealth Edison Co., Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif., Union Electric Co. of Missouri, 315 N. 12 Blvd. St. Louis, 1, Mo., Central Illinois Light Co., 316 S. Jefferson Ave., Peoria 2, Ill. and Illinois Power Co., 134 E. Main St., Decatur 7, Ill.) will participate in construction and research.

Wm. R. Goss Co., 8316 S. Ellis Ave., Chicago, Ill., LB $733,079, Neil Elementary SCHOOL for physically handicapped, 8550 S. Indiana Ave., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago 1, Ill. Bids Apr. 29.

▲ W. E. O'Neil Constr. Co., 2751 Clybourn Ave., Chicago, Ill., CA, $2,500,000, HIGH SCHOOL, CHICAGO, ILL. Immaculate High School, 610 W. Irving Park Ave., Chicago, Ill. Barry, Bryne & Parks, 626 Grove Ave., Evanston, Ill., archts. Awarded May 4.

▲ C. A. Tharnstrom Co., 7401 St. Louis Ave., Skokie, Ill., CA $4,000,000, 252-unit 22 story APARTMENT, 401 Oakdale Ave., CHICAGO, ILL. American National Bank & Trust Co., 33 N. La Salle St., Chicago, Ill. Bids Apr. 1, awarded Apr. 28. CD 3/25.

▲ Thompson Starrett Co., 130 N. Wells St., Chicago 6, Ill. CA $1,000,000, design and construct FACTORY, 801 Burlington Ave., DOWNERS GROVE, ILL. Shafer Bearing Div., Chain Belt Co., 20 N. Wacker Dr., Chicago, Ill. Awarded May 3.

▲ Esterbrook Homes, Inc., 3911 Burlington Blvd., Brookfield, Ill., Own Forces, $12,200,000. 800 HOMES, DOWNERS GROVE, ILL.

▲ Manilow Constr. Co., 105 W. Monroe St., Chicago 3, Ill., Own Forces, $14,000,000. 600 HOMES, HIGHLAND PARK, ILL.

▲ The Carroll Constr. Co., 333 N. Michigan Ave., Chicago 1, Ill., CA, $1,000,000, RESEARCH UNIT, greenhouses, paving and service bldg., LISLE, ILL. The Morton Arboretum, Route 53, Lisle, Ill. Bids Apr. 15. CD 4/7.

J. R. Jensen & Son, 915 Tower Ave., Superior, Wis., LB, $692,915, general contract 5 SCHOOL addns., ASHLAND, WIS. Bd. Educ., Ashland, Wis. Bids Apr. 30. CD 3/29.

Ben B. Gauther Co., 22 Washington Blvd. Oshkosh, Wis. CA $730,526, general contract for FOOD SERVICE and LAUNDRY BLDG. 1, WINNEBAGO, WIS., State Dpt. P. Welfare. Madison. Bids April 1. CD 4/12, under LB.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

May 25 Oklahoma
May 26 Kansas
May 27 North Dakota

STREETS AND ROADS

May 25 Oklahoma
May 26 Kansas
May 27 North Dakota

Neb., Omaha—POWER STATION—BA 6/2—Omaha Public Power Dist., 17th and Harney Sts., second unit to North Omaha Power Station addn. $800,000. Pioneer Service & Eng. Co., 231 S. LaSalle St., Chicago, Ill., engr. CD 8/27.

SOON LETS CONTRACT—BUILDINGS

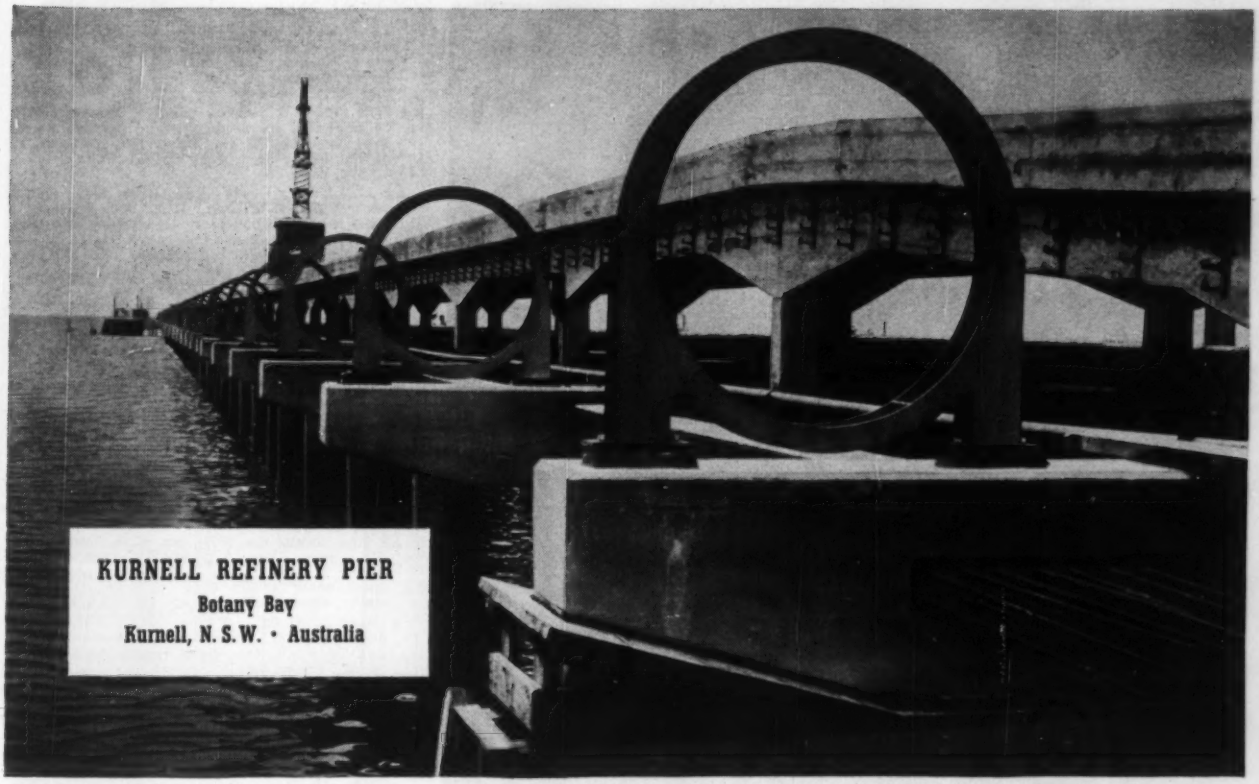
Tex. Dallas—SYNAGOGUE—Congregation Shearth Israel, 1324 Park Ave., soon lets contract, 30,000 sq. ft. masonry synagogue, $600,000. Plans deposit $25. George L. Dahl, 2101 N. Paul St., engr.-archt. CD 10/24/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Hallett Constr. Co., First National Bank Bldg., Crosby, Minn. CA $1,127,942, est. $1,088,259. stringing conductors and overhead ground wires for

(Continued on page 98)



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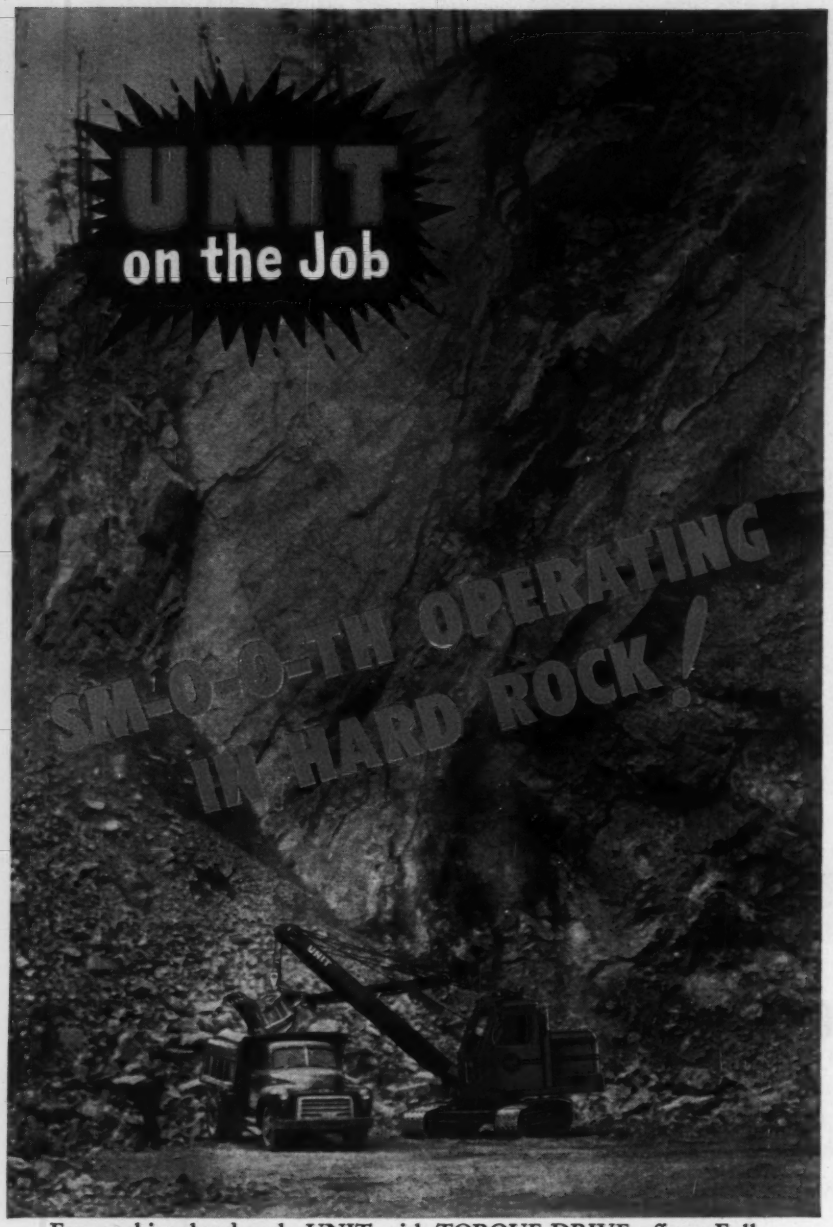

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(Continued from (page 96)

130.3 mi. of Big Bend-Huron-Watertown 230 kv transmission line, Missouri River Basin Proj., Transmission Division, Spec. DC 4374, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Huron, S. D. Bids Apr. 13, awarded May 3. CD 4/15, under LB.

† **Frank Newell & Son Co.**, Box 943, Muskogee, Okla. CA **$689,800**. storage facilities for ordnance storage area, Altus Air Force Base, ENG-34-066-55-91, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. CD 5/4, under LB.

▲† **J. J. Fritch**, 6834 Harry Hines Blvd., Dallas, Tex. CA **$1,550,421**, est. $1,000,000. Schedules 1 and 3, 3 story 25,000 sq. ft. brick veneer dormitories, Altus Air Force Base, ENG-34-066-55-76, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. CD 4/28, under LB.

▲† **Austin Road Co.**, Box 1590, Dallas 1, Tex., CA **$2,270,785**, Proposal III, runway and taxiway extens. apron strengthening and airfield lighting, Inv. No. ENG-41-243-55-56, ELLINGTON AIR FORCE BASE, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Apr. 28. CD 5/4, under LB.

† **COLORADO**—Bureau P. Rds., Dpt. Commerce Bldg., 40, Denver Federal Center, Denver,
A. S. **Horner Constr. Co.**, 118 S. Pecos St., Denver, Colo., LB **$837,824**, est. $1,031,531, 0.283 mi. Proj. 1-F Tunnel, Park Entrance Rd., Mesa Verde National Park, Montezuma Co. Bids May 5. CD 4/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Olson Constr. Co.**, P.O. Box 4058, South Denver Sta., Denver, Colo., CA, **$1,682,726**, modernization of BARRACKS, B-O-Q's and MESS HALLS, AV-05-010-55-52, CAMP CARSON, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 28. CD 9/13/51.

▲ **Noran Constr Co.**, c/o owner, CA, **$1,650,000**, subdivision of HOMES, to be known as Westminister Hills, DENVER, COLO. Blue Ribbon Homes, 150 South Fenton St., Denver, Colo.

▲ **City View Heights**, c/o Fred Maier, 1625 Clarkson St., Denver, Colo. Owner Builds, **$5,000,000**. 530-HOME DEVELOPMENT, N. Washington St. just south of Thornton, incl. 13-acre SHOPPING CENTER, will be serviced with water from 2 reservoirs to be built ½ mi. from development, DENVER, COLO.

▲ **Writer Brothers**, 532 Emporia St., Denver, Colo., Owner Builds, **$1,700,000**, 105-room LUXURY HOTEL, with swimming pool, etc., DENVER, COLO.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS

May 26 Nevada **June 16 California**

▲† **Calif., Sacramento** — WAREHOUSE — BA 6/10 — U. S. Eng., 1209 8 St., two special AMC warehouses, McClellan Air Force Base, $9,000,000. CD 5/11.

BIDS ASKED—BUILDINGS

Calif., San Francisco—SCHOOL—BA 6/1—City and San Francisco Co., City Hall, Ridgepoint No. 2 School. $916,000. Plans deposit $100. J. W. Gloe, 362 Clay St., archt. J. F. Fitzgerald, 5070 Paradise Dr., Tiburon, engr. CD 10/7.

Calif., Miranda—SCHOOL—BA 6/2—Southern Humboldt Unified School Dist., c/o Supt., Miranda, South Fork High School, South Fork, $760,000. E. F. Winkler, 251 Post St., San Francisco, archt. CD 10/7.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **UTAH**—State Rd. Comn., Salt Lake City,
Utah—**Germer, Abbott & Waldron**, Tremonton, Utah. CA **$726,877**. 3 in. plant mix road 18.7 mi., 1 concrete bridge on US 91 and St. 20, Iron Co.;
Utah—**Ross Constr. Co.**, Provo, Utah. CA **$110,670**, est. $126,873. 2 in. road mix bit. surf. 3.893 mi. American Fork and Alpine Junction, Utah Co.;
Utah—**Whiting & Raymond**, Springville, Utah. CA **$363,462**, est. $370,445. 2 in. road mix bit. surf. 10.842 mi. Tabioma Junction, Mt. Home Junc., Bonita, Duchesne Co. Grand total $1,201,009. Bids Apr. 12.

▲ **CALIFORNIA**—State Div. Hys., Los Angeles,
Webb &White, 7220½ Melrose Ave., Loss Angeles, 27, Calif., CA, **$1,244,951**, grading, surf. 0.5 mi. Sign Rte. 15 and 5 undercrossings between 0.1 mi. south of Atlantic Blvd. and Leonis St., Los Angeles Co. Bids Apr. 7, awarded Apr. 27. CD 3/21.

▲† **Blount Brothers Constr. Co.**, Bell Bldg., Montgomery, Ala., CA, **$2,599,908**, base maintenance hangar, George Air Force Base, ENG-04-353-55-116, VICTORVILLE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 20. CD 4/22, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Larwin Co.**, 242 S. Beverly Dr., Beverly Hills, Calif. Owner Builds. **$2,176,000**. 240 frame, stucco DWELLINGS, Foster Fd., Bonavista Lane, Clearwood Ave., BELLFLOWER, CALIF.

▲ **L. H. Hansen & Sons**, P. O. Box 1784, Fresno, Calif., CA, **$1,499,400**, 2 story, rein.-con. SHOPPING CENTER, FRESNO, CALIF. Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill. Bids Apr. 27. CD 5/3, under LB.

▲ **Ford J. Twaits Co.**, 449 S. Beaudry St., Los Angeles, Calif., LB $1,408,000. PHYSICAL SCIENCES BLDG., LOS ANGELES, CALIF. University of Calif., 405 Hilyard Ave., Los Angeles, Calif. Bids May 10. CD 3/23.

▲ **Sterling Building Co.**, 727 Shasta St., Redwood City, Calif., Owner Builds. $10,000,000. 350-HOME subdivision, Skyline Blvd. and Redwood Rd., OAKLAND, CALIF.

▲ **Milton J. Brock**, 2894 Rowena Ave., Los Angeles, Calif., Owner Builds, $30,000,000. 750-HOME subdivision and SHOPPING CENTER, north Highlands, Larchmont Village, near SACRAMENTO, CALIF. Wm. Bray, 5670 Wilshire Blvd., Los Angeles, Calif, archts. CD 1/5/54.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
June 15 Ontario
STREETS AND ROADS
June 15 Ontario

BIDS ASKED—BUILDINGS

▲ **Ont., Petawawa**—MESSES, etc.—BA 5/31—Defense Constr. Ltd., 56 Lyon St., Ottawa, 2 W.O's and Sergeants messes and 2 sergeants quarters, army camp. $2,500,000. Plans deposit $100. CD 12/15.

▲ **B. C, Vancouver**—MEDICAL SCHOOL, etc.—BA 6/9—Vancouver General Hospital, 12 and Heather Sts., Medical School and X-ray Dpt. addns., alterations, Vancouver General Hospital $1,000,000. Plans deposit $50. Sharp & Thompson, Berwick, Pratt, 1553 Robson St., archts. CD 8/29/47.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **W. C Wells Constr. Co Ltd.**, 10519 115 St., Edmonton, Alta., LB, $1,360,000, preliminary section of main sewage plant, EDMONTON, ALTA. City, Civic Block, Edmonton, Alta. Bids May 2. CD 4/8.

▲ **Foundation Maritime Ltd.**, 1900 Sherbrooke St. W., Montreal, Que., CA, $7,112,528, general contract power development Beechwood, St. John near Perth, NEW BRUNSWICK, New Brunswick Electric Power Comn., 527 King St., Federicton, N. B. Bids May 31. CD 3/16.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto,
Ont.—**Brennan Paving Co.**, Ltd., 400 Gage Ave. N., Hamilton, Ont. LB $78,019, resurf. 2.6 mi. Hy. 2, Campbell's Corners to Mausoleum, Hamilton;
Ont.—**Rayner Constr. Ltd.**, 29 Commercial Rd., Toronto, Ont., LB $1,246,005, Contract 55-22, c. conc., gran. base 7 mi. on controlled access road, Hy. 401, Chatham;
Ont.—**Law Constr. Ltd.**, 225 Sterling Rd., Toronto, Ont., LB $188,416, gran. base, hot mix paving 10 mi. Hy. 11, Seven Bridge to Gravenhurst;
Ont.—**Dibblee Constr. Co. Ltd.**, 394 Bank St., Ottawa, Ont., LB $331,830, resurf. 14.5 mi. Hy. 17 and 12 mi. Hy. 16, near Ottawa;
Ont.—**H. J. McFarland Constr. Co. Ltd.**, Box 559, Picton, Ont., LB $145,020, Contract 55-353, resurf. 9.3 mi. Hy. 2, near Belleville;
Ont.—**Curran & Briggs Ltd.**, 61 Haverson Blvd., Toronto, Ont., LB $360,066, Contract 55-352, resurf. 8.54 mi. Queen Elizabeth Way, dual lane hy. near Hamilton. CD 4/27/44.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hegeman-Harris Co., Inc.**, 30 Rockefeller Plaza, New York 20, N. Y. CA Est. $3,000,000, 10 story Manitoba MERCHANDISE MART, intersection of Ellice and Notre Dame Aves., WINNIPEG, MAN. Canadian & General Development Corp., 608 Fifth Ave., New York, N. Y. Northwood, Chivers, Chivers & Casey, Nanton Bldg., Winnipeg, Man., archts. CD 11/26.

▲ **Anglin-Norcross, Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA $2,000,000. PAPER PLANT addn. wood room, causticizing bldg., washing bldg., bleach plant and chemical preparation bldg., DRYDEN, ONT. Dryden Paper Co. Ltd., Dryden, Ont. Bids Apr. 25, awarded May 3. CD 4/13.

AMERICANS ABROAD

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hydrocarbon Research, Inc.**, 115 Broadway, New York, N. Y., CA, $12,000,000, OIL REFINERY at Aspropyrgos, 11 mi. west of Athens, GREECE, Greek Ministry of Coordination, General Directorate, Athens, Greece. CD 8/20, under Foreign.

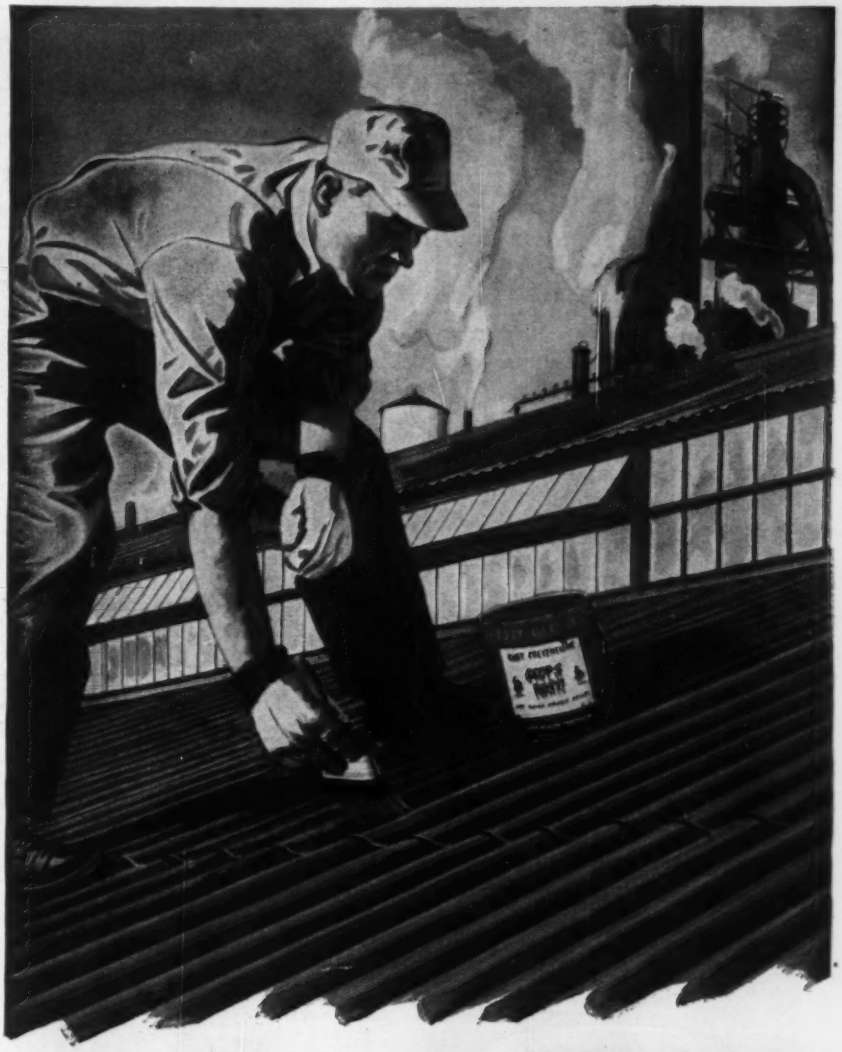
LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Fisher Contg. Co.**, 2201 S. 19 Ave., Phoenix, Ariz., U. S. A., CA $1,178,885 11 kilometers Inter-American Highway in northern Guatemela, GUATEMELA. Govt. of Guatemela, Guatemela City, Guatemela.

(Proposal Advertisement see pp. 111 to 114)



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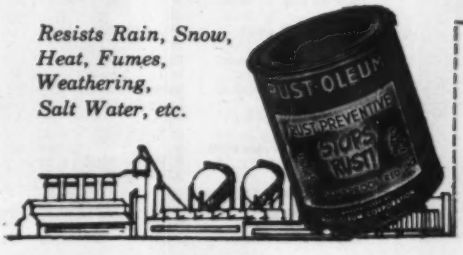

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UNIT PRICES

California Dam Spillway and Outlet

Rothschild, Raffin & Weirick bid 14.7% below the engineer's estimate for the $824,258 spillway and outlet works contract at Cherry Valley dam. Guy F. Atkinson Co., the dam contractor already on the job, was fourth low at $892,804.

Cherry Valley earth and rockfill dam is part of San Francisco Public Utility Commission's Hetch Hetchy water supply. Location is in Stanislaus National Forest, Tuolumne County, Calif., 60 mi from the nearest railhead. H. E. Lloyd is Hetch Hetchy manager and Chief Engineer.

This contract includes the concrete spillway weir, training walls, spillway bridge, submerged outlet works, and a concrete plug (ENR Aug. 26'54 p.34). The contractor will also furnish and install 736 ft of 15-ft 4-in. diameter plate steel liner in a portion of the outlet tunnel; and construct an intake tower with trashracks and sluice gates and an outlet control house including three 90-in. butterfly and two 66-in. hollow-jet valves.

Part of the spillway excavation was done under the dam contract; this contract includes the remaining, mainly rock.

Approximate wage rates for labor are: skilled $3.00 per hr, semi-skilled $2.75, common $2.50.

1C Rothschild, Raffin & Weirick, San Francisco, Calif. $824,258
2 John C. Glas Co., Sacramento, Calif. 881,000
3 F. W. Case Corp., Newhall, Calif. 1,063,914
EE Public Utilities Commission, San Francisco 966,740
Schedule: 5-9-55 to 7-3-56; liq dam: $250/day

Bids: 4-18-55 Items	Unit	Quantity	Unit Prices 1 C	2
Excavation	cy	1,250	$15.00	$20.00
Concrete, cl A:				
intk towr bel el 4520	cy	435	100.00	75.00
abv el 4520	cy	35	200.00	240.00
retaining walls	cy	300	70.00	60.00
spillway bridge	cy	180	100.00	120.00
outlt wks contrl hse	cy	175	100.00	120.00
Conc, cl B, spilwy weir	cy	1,000	60.00	60.00
gravity walls	cy	600	60.00	58.00
rock facing	cy	1,615	40.00	55.00
anchor blocks	cy	1,000	100.00	40.00
outlt wks control hse	cy	600	50.00	72.00
Reinforcing steel	lb	405,000	0.10	0.12
Drill & grt anchor bars	lf	4,550	4.00	4.00
Drill weep holes	lf	500	2.00	2.00
Grout pipe	lf	2,000	0.30	0.50
Drill set-ups	ea	125	8.00	10.00
Drill grout holes	lf	6,500	1.75	2.00
Drill cmt from grout his	lf	100	0.75	1.00
Grouting connections	ea	125	7.50	10.00
Grouting	cf	3,000	3.25	3.00
Plate stl lng ½" thick	lf	695	182.00	250.00
¾" thick	lf	41	232.00	400.00
Tunnel lining grout	cf	13,500	2.00	2.50
Coal tar enamel lining	sf	36,000	0.90	0.50
Outlet pipe & specials	lb	100,000	0.22	0.40
Butterfly valves, inst	ls	.....	15,000	15,000
Hollow-jet valves, inst	ls	.....	15,000	10,000
Piping, misc	lb	10,500	0.50	0.80
Metering equipment	ls	.....	2,000	500.00
Trashracks	lb	65,000	0.25	0.25
Sluice gates & operators	ls	.....	25,000	17,000
Metal work, misc	lb	32,500	0.22	0.50
Galvanizing	lb	3,500	0.05	0.10
Outlet works control hse	ls	.....	4,000	6,000
Wood poles, 35-40'	ea	12	140.00	200.00
45'	ea	5	150.00	230.00
Single arm assembly	ea	5	30.00	35.00
Double arm assembly	ea	7	50.00	65.00
One-way dead end assem	ea	2	80.00	90.00
Two-way dead end assem	ea	7	100.00	160.00
Line wire No. 1/0 ACSR	lf	5,850	0.08	0.30
Line terminal equipment	ls	.....	1,000	1,600
Guy assembly, 1-strand	ea	9	45.00	65.00
Guy anchor	ea	4	20.00	70.00
Int elec syst, cntrl hse	ls	.....	1,500	2,800
Road maint allowance	ls	.....	10,000	10,000

Chattanooga Sewer Tunnel Price Gets a Contract

The tunnel section brought the W. L. Hailey & Co. bid down $36,070 to $287,711 to land a Chattanooga, Tenn., sewer contract. This is 0.7 mi of combined sanitary, industrial and storm drainage, the Central Ave.-Tannery Flats branch of the City's new interceptor system.

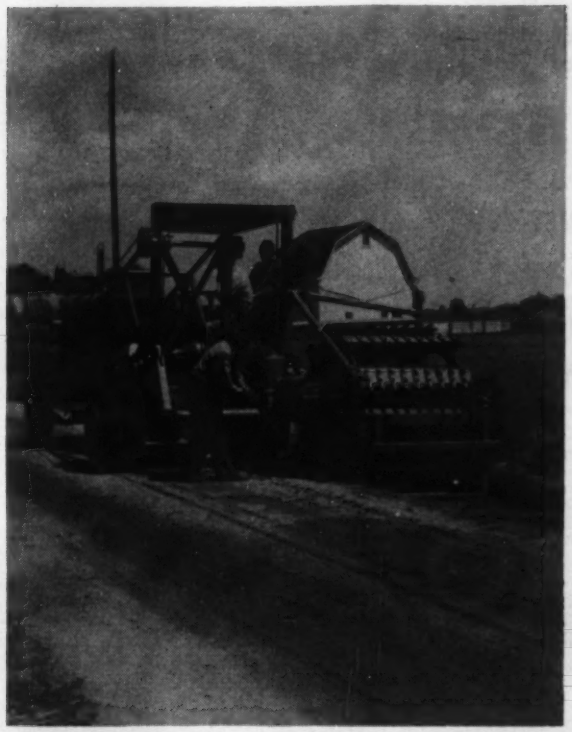
Havens & Emerson are consulting engineers. B. F. Barnes is City Engineer.

The 66-in tunnel sewer will be built 20 to 25 ft beneath an industrial plant yard. The alternate tunnel item which would permit tunnel extension outside the yard instead of open trench was not accepted.

1C W. L. Hailey & Co., Nashville, Tenn. $287,711*
2 Kenny Construction Co., Chattanooga, Tenn. 320,019*
Completion: 200 calendar days Liq damages; $60 per day

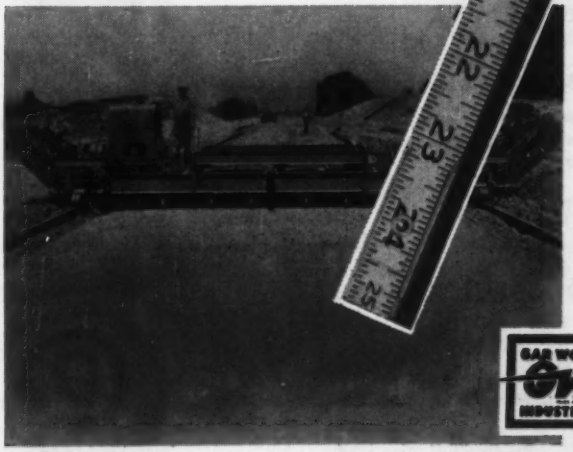
Bids: 4-5-55 Items	Unit	Quantity	Unit Prices 1 C	2
Central Avenue sewer			**$253,880***	**$276,899***
Excavation, trench	cy	12,000	5.30	3.60
structural	cy	278	5.30	20.00
Sheetg & shorg left in p	Mfbm	20	65.00	100.00
Excavation, rock	cy	1,300	25.00	20.00
Cr rock & bedg matl, trenches	cy	800	4.00	6.00
Concrete, cl A	cy	84	70.00	90.00
B	cy	5	40.00	40.00
Reinforcing steel	lb	10,000	0.15	0.15
B&S, 8" VC, pourd bit jt	lf	520	2.00	2.00
15"	lf	30	4.00	4.00
18"	lf	529	5.00	5.00
Conc P, SS, rubr jt, 24"	lf	333	8.00	8.00
ES 24"	lf	76	8.50	9.00
ES 66"	lf	403	40.00	40.00
ES 72"	lf	645	45.00	45.00
VC sew wyes, ES, pourd. bit jt, 8x6"	ea	3	6.00	7.00
18x8"	ea	2	25.00	20.00
Conn in 66" RCP, 8"	ea	2	150.00	500.00
15"	ea	3	200.00	500.00
MH 8' deep or less: std fr & cover	ea	5	250.00	400.00
watertight fr & cover	ea	1	270.00	450.00
MH separate conc base: std fr & cover	ea	3	220.00	350.00
48" fr & cover	ea	2	260.00	400.00
Extra depth of manholes	lf	54	40.00	50.00
MH 18" drop connection	ea	1	50.00	250.00
Circ CI tide gate, 72"	ea	1	3,500	6,000
Sewage reg, 12x21"	ea	1	5,000	4,000
Replace conc sidewalks	sy	10	6.00	8.00
curbs & gutr	lf	10	6.00	5.00
pavement	sy	25	10.00	12.00
Repl bit surf, double bituminous treatment	sy	150	3.00	5.00
Riprap	sy	10	10.00	8.00
Tunnel:				
24" sewer under RR	lf	134	110.00	200.00
66" s und Andrews prop	lf	343	180.00	250.00
Alley type inlets	ea	1	200.00	200.00
Tunnel alternate	lf	579	180.00	250.00
Tannery Flats sewer			**$33,830**	**$43,120**
Excavation, trench	cy	6,000	2.00	3.60
Cr rock & bedg matl, trenches	cy	220	4.00	6.00
Concrete, cl B	cy	30	40.00	40.00
Conc P ES rubber jt, 36"	lf	850	20.00	18.00
MH 8' deep or less std fr & cover	ea	3	250.00	400.00
Extra depth of manholes	lf	50	40.00	50.00

*Not incl tunnel alternate



HI-WAY WIDENER DIGS CLEAN TRENCH IN ONE PASS

WASTE IS ELIMINATED WITH THE SPREADER



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No. 5518

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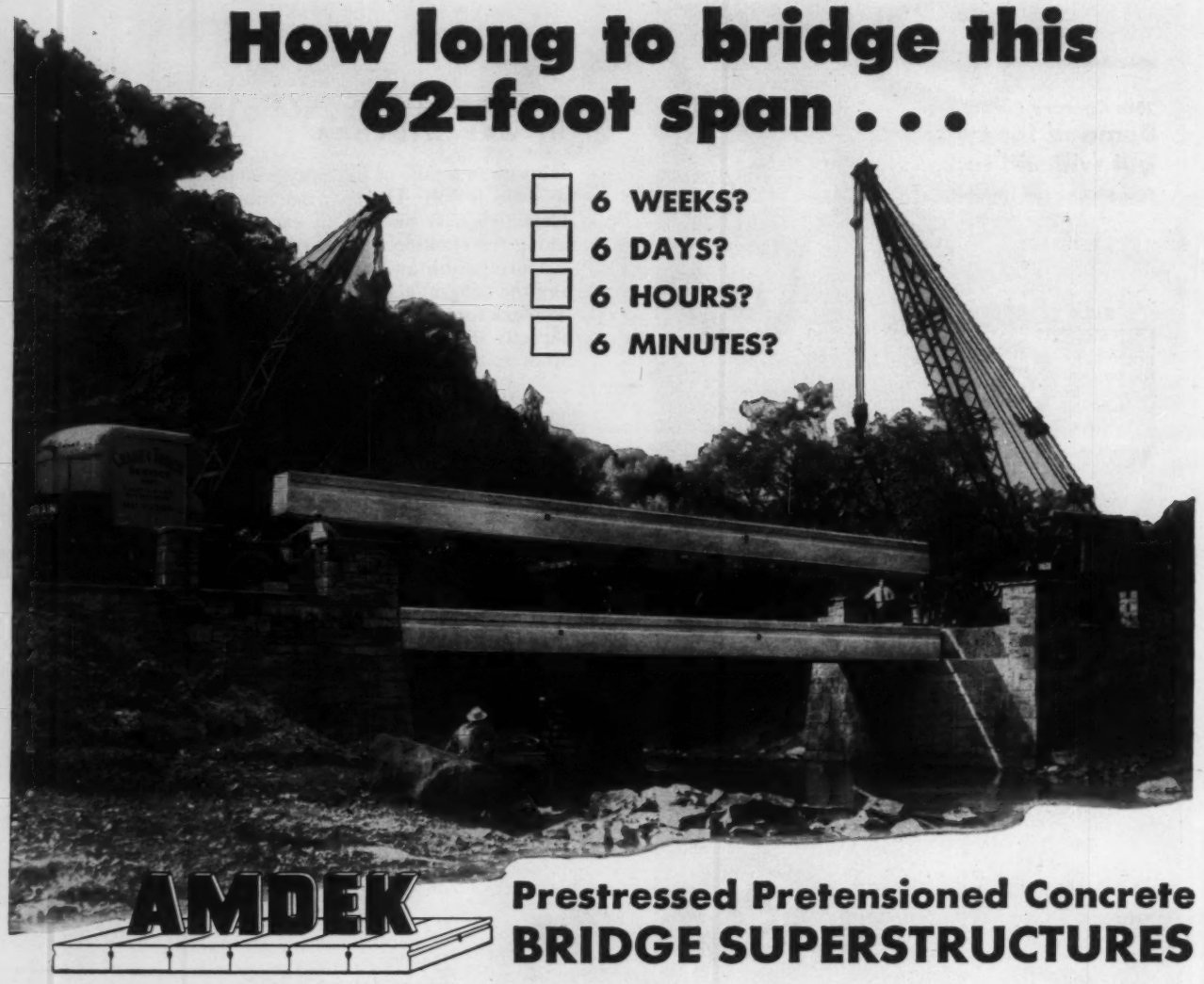

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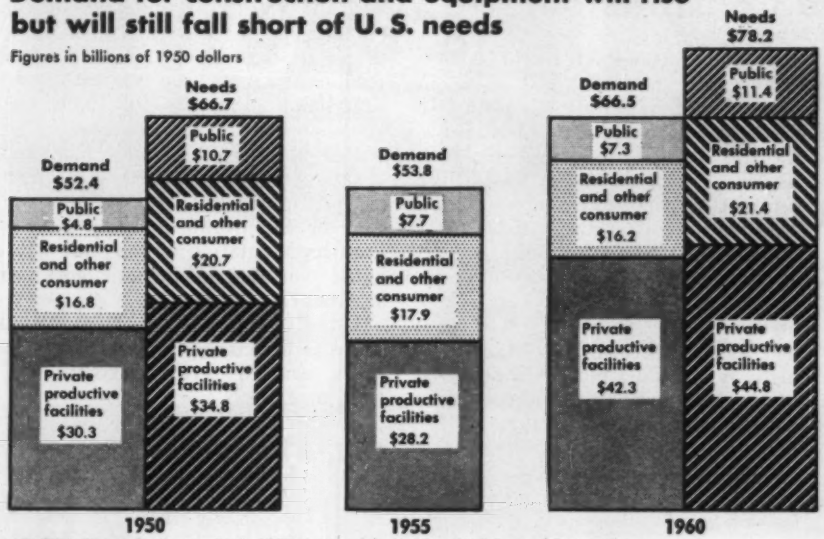
20th Century Fund forecast for 1960:

Demand for construction and equipment will rise but will still fall short of U. S. needs

Figures in billions of 1950 dollars



SOURCE: Twentieth Century Fund; 1955 estimated by McGraw-Hill Dept. of Economics. Components do not add to totals because of rounding.

THE LONGER LOOK:

New Twentieth Century Fund 1960 forecast sees building boom still going strong under pressure of a growing economy

The building boom that has been running strong for almost 10 years is far from being spent. The construction industry—along with producers of capital equipment—can look forward to mounting demand that by 1960 will raise their total output 25% over the high levels of 1950, even after allowing for changes in prices. And this will still leave the economy with a huge backlog of unsatisfied needs.

This forecast, drawn from a massive survey, America's Needs and Resources, just published by the Twentieth Century Fund, reinforces other recent optimistic looks into the future. But it deserves special attention because of (1) the thoroughness of this 1,100-page study and (2) the reputation for accuracy of predictions in the earlier version of this survey published in 1947, which indeed erred somewhat conservatively.

• **Demands and needs**—J. Frederic Dewhurst and his associates in the preparation of the Twentieth Century Fund survey go into minute detail in their 1960 projections. For every category of expenditures they estimate what will actually be spent (demand) and also the amount that would be necessary to provide in addition a "standard of living at a health and decency level" for the entire population (needs). Here are the estimates of "demand and needs" for various areas involving construction, with all figures in 1950 dollars:

• **Residential:** To bring housing up to a satisfactory standard would require a program costing $14.6 billion annually, or $900 million more than actual spending in 1950 and $2.6 billion more than estimated spending in 1960. "This would replace or rehabilitate substandard housing over a 15-year period, provide satisfactory dwellings for new families and enable 'doubled-up' families to separate." In physical terms, an average of 1,500,000 units per year would be required for the entire decade.

• **Education:** Adequate buildings and equipment to replace worn-out plants and handle swarms of additional primary and secondary students would require annual expenditures of $3 billion for 10 years. For higher education, about $13.5 billion in capital outlays would be needed over the decade. Actual spending in 1960 is expected to be only about half the annual need, $1.7 billion for elementary and secondary schools and $600 million for colleges and universities. This will be one of the economy's biggest deficiencies.

• **Religious:** About $550 million will probably be spent on new construction of religious buildings in 1960.

• **Hospitals:** The nation needed twice as many hospital beds as it had in 1950, according to the U. S. Public Health Service. Spending on facilities in 1960 will probably be $1.2 billion, against a need of $1.8 billion and compared with actual spending of $840 million in 1950.

• **Highways:** Expenditures of $70 billion on highways over 30 years still leave us with a congested road system urgently requiring repair and modernization. Annual spending of $5.5 billion is needed, compared with only $2.3 billion in 1950 and an estimated $3.5 billion in 1960.

• **Conservation and development:** To improve watersheds, finance adequate soil conservation, provide irrigation and drainage, protect forests and provide parks would require $1.7 billion annually. Actual 1950 spending was $881 million.

• **Private productive facilities:** Factories, machinery, commercial buildings and other productive facilities would have to increase to meet consumer "needs" but the gap estimated in the study is far less than for most public capital facilities. The 1960 need is set at $44.8 billion, only 6% above probable demand of $42.3 billion but almost 50% over 1950 actual spending of $30.3 billion.

• **The economy in 1960**—The Twentieth Century Fund's view of 1960 is middle-of-the-road. It considers a gross national product of $490 billion (in 1950 dollars) possible if we have a much bigger armament program but regards $414 billion as a more realistic forecast. This would mean a growth of 29% over the decade 1950-1960, though population growth would make this only 18% per capita.

If continued advances in medical science keep any of us alive until the year 2050, the survey holds out this imposing prospect: increases in productivity at the rate we have enjoyed in the last 100 years would make it possible for us to do in one day the work that now takes a week.

(B&F continued on page 104)

Highway Income Still Provides Plenty Of Leeway for Future Construction

Receipts of cash for highways continue to run well ahead of spending, according to latest figures just released by the Bureau of Public Roads. During 1954, about $8¼ billion was set aside for highways and only about $6.6 billion was actually spent (table, below). This leaves large reserves of cash to finance the construction contracts that are being let this year.

Highway income turned out to be about $1 billion higher in 1954 than BPR forecast (ENR—June 24 '54, p. 89). The difference was largely accounted for by an extra $800 million in bond issue proceeds and an increase of about $120 million in revenue from highway-user imposts.

• **Toll road borrowing**—A substantial proportion of the bond issues were for toll facilities. BPR estimates that in the 10-year period from 1945 through 1954, about $8 billion in highway bonds have been issued. About $4.5 billion of these were for construction of toll facilities.

Of the $6.6 billion spent in 1954, about $2.8 billion went into capital outlay for state highways, including toll roads, bridges and tunnels. That is a sizeable climb from the $2.3 billion spent in 1953. Capital outlay from county and other local roads went from $495 million in 1953 to $545 million last year. Spending for city streets gained even less—from $423 million to $453 million, indicating that this is a much-neglected place of the highway problem.

• **Rising expenses**—As might be expected, the amounts spent on other aspects of highways also continued to rise. Both maintenance and administrative costs in 1954 were higher than had been earlier forecast by BPR—substantially higher in the case of administrative costs. They totaled $311 million in 1954, according to BPR estimates, compared with an early forecast of $254 million. The cost of highway police was also higher than had been forecast. However, total highway spending of $6.6 billion was much closer to the BPR forecast than BPR's projection of income.

Since 1945, highway income has almost tripled, largely because of increased state highway-user imposts and borrowing. For instance, state highway-user fees increased 11% in 1954 over the previous year. Tolls increased at about the same rate. However, there was only a very slight gain from property taxes and miscellaneous receipts.

Westchester Parkway Plan Blocked by Governor's Veto

Plans of New York's Westchester County to modernize its parkway system to the tune of about $35 million in construction seemed blocked for a year, anyway, with veto of a measure that would have permitted the county to establish a highway authority to handle financing.

The county—one of the first governmental units anywhere to embark on an integrated highway system of the parkway type—previously had built all its major routes with its own funds or with federal and state assistance, but has been charging tolls on its Hutchinson River Parkway for some years. It had planned that the new authority would have the power to issue bonds secured by tolls to be collected on existing and new roads.

Reasons for the failure of the enabling act were clouded in a screen of partisan politics—particularly in view of the county's solidly Republican representation in the state legislature, versus a Democratic governor at Albany.

County officials said they would resume piecemeal repairs to their roads, pending further legislative action next year.

Utility Expansions

Expenditures at the rate of more than $100 million a year for construction work have been assured for the Philadelphia area, announcements by two major public utilities confirmed last week.

Delaware Power & Light Co. said it will spend more than $60 million on expansion of facilities in the area over the next five years; Public Service Electric and Gas Co. said it will spend more than $90 million in 1955 alone on new facilities.

Bond Issues Are Approved For Coyote Valley Project

Assured of federal cooperation for the long-discussed project, voters of Sonoma County, California, have approved two bond issues totaling more than $14 million to help finance construction of the $22-million Coyote Valley Dam and water distribution system.

The Army's Corps of Engineers will supervise construction of the project, and federal contributions will account for the remainder of the cost.

The proposed dam would be built on the east fork of the Russian River, about five miles from Ukiah. The earthfill structure would have a crest length of 2,800 ft, and would be 160 ft high, to store a total of 122,500 acre ft of water.

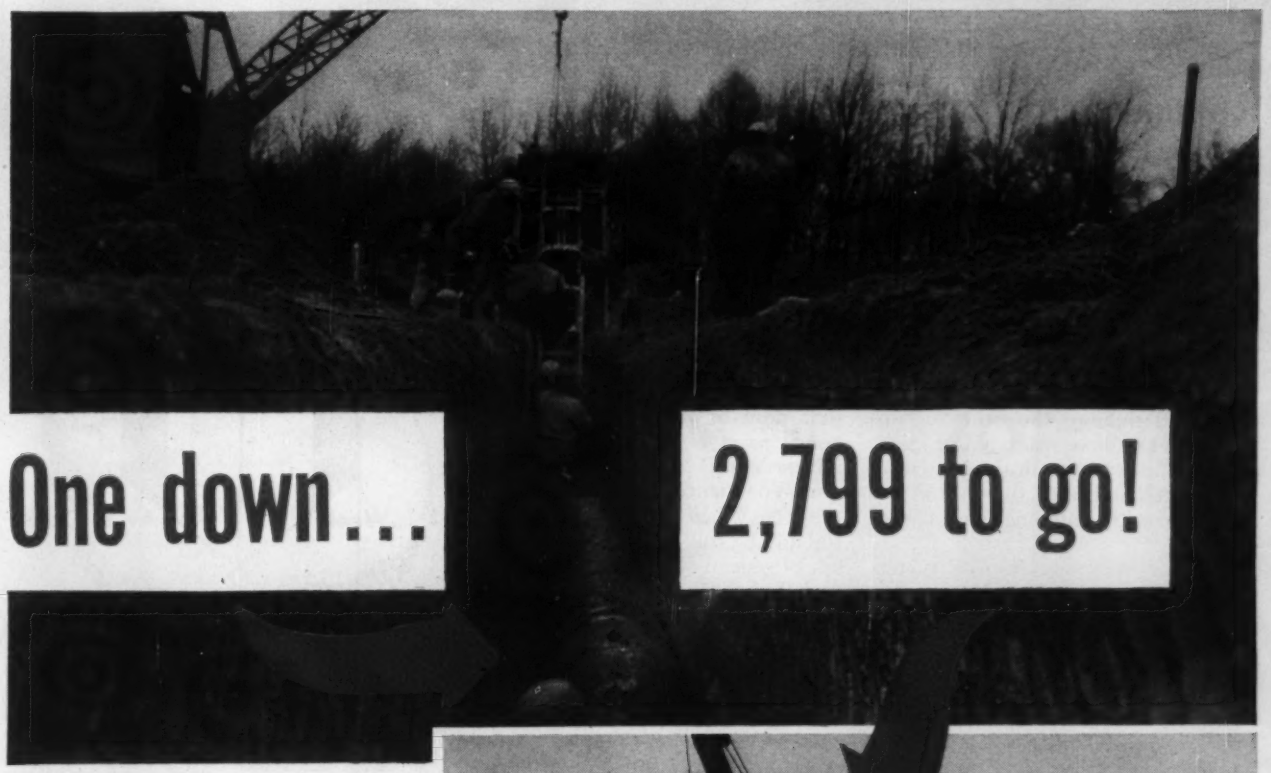
First engineering studies for the dam were completed in 1939, then plans were shelved during World War II, to be recommended by the Corps a decade later. In 1950, federal expenditures of $11.6 million were authorized for the dam, to cover flood-control costs. Local share is to cover water conservation benefits.

(*B&F continued on page 106*)

Highway Income and Expenditures: 1953–1954

Type of Income	1953	1954
From federal sources	$634,000,000	$675,000,000
Highway-user imposts	3,039,000,000	3,318,000,000
Toll receipts	202,000,000	229,000,000
Property taxes and gen. revenues	1,115,000,000	1,161,000,000
Miscellaneous	141,000,000	148,000,000
Total revenues	**$5,131,000,000**	**$5,531,000,000**
Bond issue proceeds	1,349,000,000	2,725,000,000
Grand total—Income	**$6,480,000,000**	**$8,256,000,000**
Type of Expenditure		
Capital outlays	**$3,272,000,000**	**$3,856,000,000**
Maintenance	1,701,000,000	1,780,000,000
Administration	279,000,000	311,000,000
Highway police	111,000,000	121,000,000
Interest	173,000,000	212,000,000
Total direct expenditure	**$5,536,000,000**	**$6,280,000,000**
Obligations retired	329,000,000	341,000,000
Grand total—Expenditures	**$5,865,000,000**	**$6,621,000,000**

Source: U. S. Bureau of Public Roads



One down...

2,799 to go!

THESE are USS National Seamless Steel Bottles, each containing 25 *thousand* cubic ft. of gas at 2240 p.s.i., being buried during a recent installation of *2800 bottles.*

The bottles, buried in long rows, then interconnected and welded together by means of U-shaped pipe expansion bends, average out to 39 feet, 3 inches long and 24 inches in diameter. Each one is pierced from a solid billet of high quality steel, assuring the utmost in strength and dependability. And every bottle must pass a severe hydrostatic test before it leaves the mill.

The safest, most practical method of storing gas is in National Seamless Steel Bottles. Buried underground, they are protected from storms, winds, aircraft and any other surface dangers. Underground temperatures are relatively stable the year round so gas pressure doesn't fluctuate as it would in an above-ground installation.

Underground storage is economical. Unlike surface installations, steel bottles do not have to be painted periodically, nor do they require inspection or protection against weather extremes. However, if it becomes necessary, any block of bottles may be taken off the line very simply, without interrupting the gas pressure of the other groups of bottles.

For full details about this modern gas storage system, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

NATIONAL SEAMLESS STEEL BOTTLES

WALLS WITHOUT WELDS

UNITED STATES STEEL

Revamping of Connecticut Road Financing Gets Sidetracked by New Proposals

Highway financing proposals and counter-proposals continue to keep the political pot boiling in Connecticut.

Last week, State Highway Commissioner Newman E. Argraves presented two separate programs to the legislature's roads committee. One was a four-year program that would cost $328 million; the other a two-year, $114-million roadbuilding plan.

Republican leaders in the legislature immediately indicated they would not go along with anything but a two-year program. And, though Democratic Gov. Abraham Ribicoff prefers the four-year plan, he will not turn down the two-year program. For the $114-million program, $40 million would come from highway fund resources and $70 million would be financed by bonds, presumably backed by highway revenues.

These legislative developments apparently sidetrack a far-reaching highway program recommended early this month by a special advisory committee, composed of five bank and insurance executives headed by Frazar B. Wilde, president of the Connecticut General Life Insurance Co. Nevertheless, some of the concepts of highway financing contained in this committee's report will undoubtedly have some influence on future highway policy in Connecticut.

A drastic revamping of current highway financing practices was urged. It was recommended that $100 million in bonds already sold for the Greenwich-Killingly cross-state toll road, which are guaranteed by gas tax revenue, be replaced by general obligation bonds. The $300 million in bonds yet to be issued would be backed as far as possible by pooled tolls from other facilities and to the extent necessary by general obligation bonds.

According to the committee's recommendation, toll revenues would constitute a revolving fund to finance future projects. And, it was suggested that tolls be increased on certain facilities.

The Wilde committee, which was appointed by Gov. Ribicoff, recommended a $700-million, 10-year highway program, which would be in addition to the projected $400-million Greenwich-Killingly toll road.

Cost of this program would be met by issuing as needed either general obligation or guaranteed revenue bonds, depending on the market conditions at the time.

The Wilde committee summarized its thinking on Connecticut's road financing problem setting forth these goals:

1. To establish as large a part as possible of the state's road and bridge program as completely self-supporting toll projects and to finance such projects primarily by the sale of revenue bonds payable solely from combined toll revenues.

2. To finance that portion of toll projects which cannot be financed suitably by toll revenue bonds, by the sale of general obligations to the extent such bonds can be serviced by combined toll revenues.

3. To finance non-toll projects by the sale of general obligations, state revenue bonds, or guaranteed revenue bonds, to the extent such bonds can be serviced by highway fund revenues.

4. To create and follow a long-range financial policy that is as simple, flexible and free of restrictions as possible, thus reserving for present and future use all possible means of financing.

Business Briefs . . .

• **Expansion plans**—Republic Steel Corp., Cleveland, has approved a previously announced appropriation of $35 million for new equipment and facilities, to include hot and cold rolled sheet expansions at Gadsden, Ala., and a by-product coke oven battery at Massilon, Ohio.

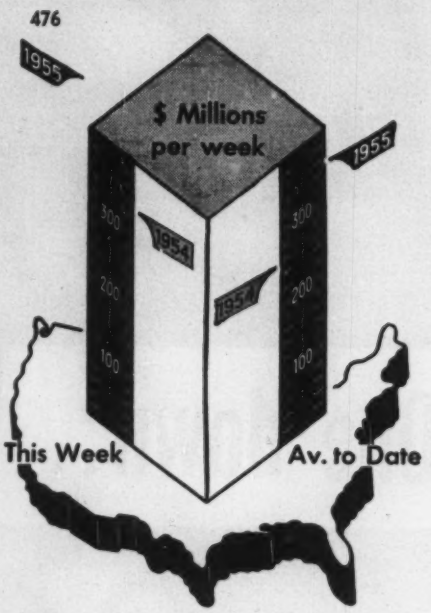
• **Steel to plastics?**—Lukens Steel Co., Coatesville, Pa., which specializes in heavy steel plate and plate products, reports it has been studying hundreds of new businesses in a quest for diversification. Among the studies: plastics, pleasure boats, Do-It-Yourself items; contractors equipment.

• **For stores**—The Independent Grocers' Alliance will spend more than $10 million for construction in the Pacific Northwest within the next six months, according to Orville W. Johler, vice president of the group. Members include 56 stores in the Puget Sound (Washington) area.

• **Gypsum plant**—Kaiser Gypsum Co. has announced it will build a $5-million gypsum board plant and plaster mill at Pittsburg, Calif. Plant will include six main buildings and auxiliary structures.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 20 wks 1955	1954	% chge
Federal	$33.8	$676.4	$393.3	+72
State and municipal	117.4	1,953.4	1,681.8	+16
Total public	151.2	2,629.8	2,075.1	+27
Total private	324.5	4,510.1	2,979.3	+51
U. S. Total	$475.7	$7,139.9	$5,054.4	+41

Contracts by type of work

Waterworks	$5.7	$99.0	$87.0	+14
Sewerage	7.1	152.7	144.9	+5
Bridges	7.4	176.5	141.6	+25
Highways	33.0	754.9	597.9	+26
Earthwork, waterways	43.1	201.1	110.5	+82
Buildings:				
Public, excl. hsg.	17.1	637.8	618.7	+3
Housg., public	9.8	111.4	70.3	+58
Housg., private	223.1	2,676.4	1,647.6	+62
Commercial	20.3	627.2	472.8	+33
Industrial	78.7	974.2	744.9	+31
Unclassified	30.4	728.7	418.2	+74
Total	$475.7	$7,139.9	$5,054.4	+41

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)	Week of May 12 1955	Cumulative 19 wks 1955	% chge '54-'55
Corporate securities	$118.7	$1,257.0	+8
State and municipal:			
All except housing	31.5	1,460.3	−27
Housing	...	46.2	+8
Federal loans	7.7	38.3	−20
Federal aid	95.0	95.0	...
Total non-federal	$252.9	$2,896.7	−11
Federal appropriations:			
In U. S.	...	59.2	...
Outside U. S.	...	...	...
Total new capital	$312.1	$2,955.9	−10

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction Cost	5/12	653.86	314.31	137.07
	4/28†	653.26	314.02	136.95
Building Cost	5/12	463.43	250.52	131.73
	4/28†	462.55	250.04	131.48
Volume	Apr.	609	248	176
	Mar.	691	281	200

† Official monthly index for May

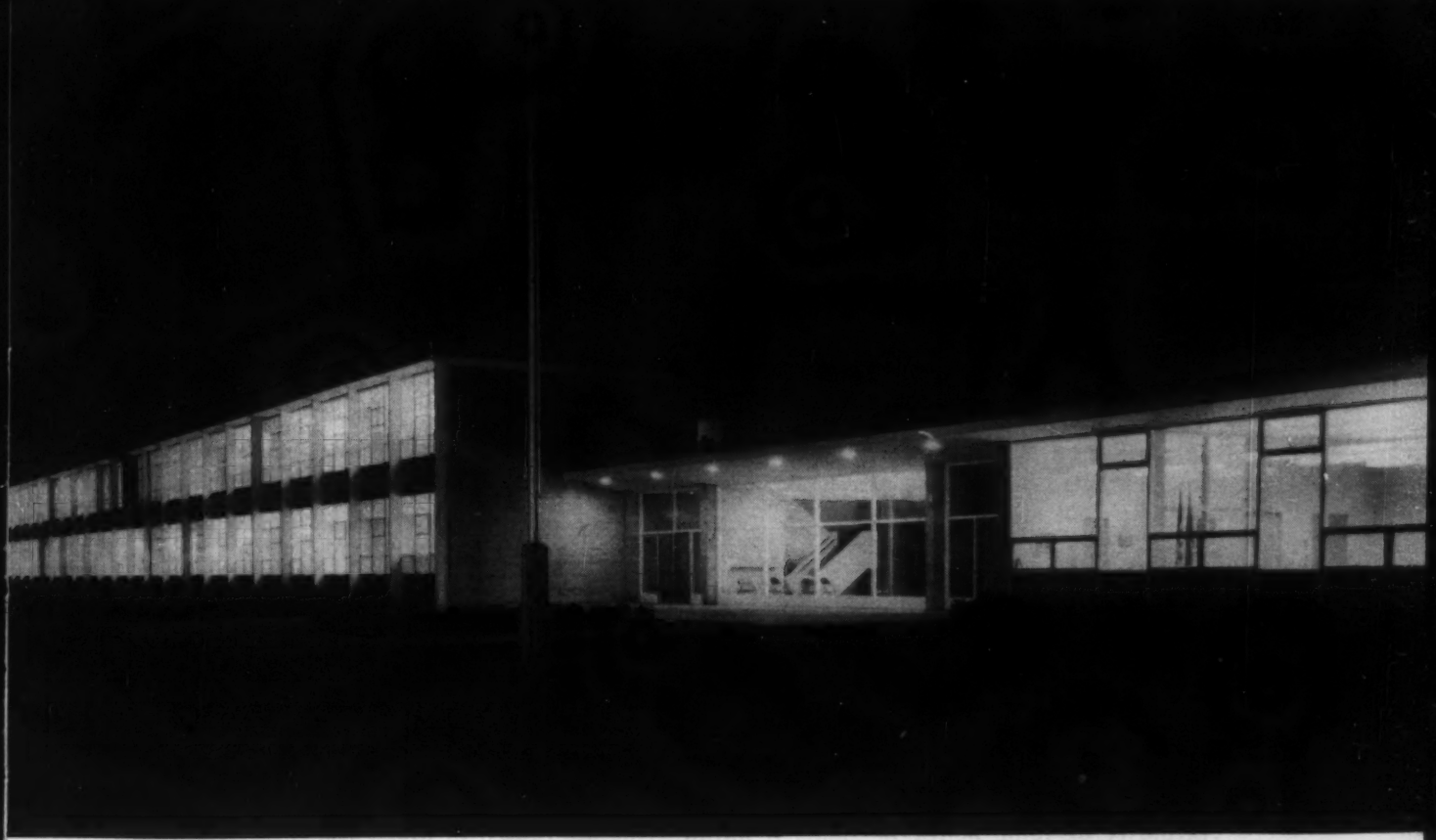


Photo By: Lens-Art Photo

A Special Report to the Construction Industry

SCHOOLS: HOW TO GET THE MOST FOR OUR MONEY

coming in Engineering News-Record next week.

Every working day in the year, construction is started on about 20 new school buildings. Yet every year we slip another 30,000 to 40,000 classrooms behind our growing need for schools. Our school housing situation is at its lowest ebb since the 1920's.

There are only two ways to get more schools built: 1) get more money, 2) make better use of present money. Getting more money is primarily a political task. Building "more school" for the same amount of money is primarily a construction task.

Next week, Engineering News-Record will present a special report that has been in research and preparation stages for more than six months. It will dig deeply into the reasons for our national school shortage and how we can get the most new schools for our money. Eight major sections will cover:

1. How to get the schools we need.
2. Our need for classrooms.
3. The financial problem.
4. How to stretch the school building dollar.
5. How to save in the construction stage.
6. The right way to go about building a school.
7. How much should your school cost?
8. How to cope with budget critics.

Be sure you read "The Schools We Need" in Engineering News-Record, May 26, 1955.

ENGINEERING
NEWS-RECORD

ABP ABC

A McGRAW-HILL PUBLICATION, 330 WEST 42ND ST., NEW YORK 36, N. Y.

PLUMBERS' Durkin criticizes and . . .

JOHN T. DUNLOP defends joint board.

Disputes Board Under Fire

Authority of joint board becomes a major issue in fight waged by lathers and backed by plumbers' Martin Durkin

A jurisdictional dispute between carpenters and lathers this week threatened to undermine the effectiveness of the labor peace-machinery in the construction industry.

The authority of the National Joint Board for the Settlement of Jurisdictional Disputes has been directly challenged by the lathers who have won the support of Martin Durkin and his powerful plumbers union.

The fight started with refusal of a local of the AFL's International Union of Wood, Wire and Metal Lathers to accept a joint board decision last December which gave an acoustical ceiling job to carpenters. The lathers refused to comply.

Normally, when the nine-member board, composed of four industry and four union members, with John T. Dunlop as impartial chairman (ENR Sept. 16, 1954, p. 28), makes a jurisdictional decision, all parties accept the ruling. Hundreds of cases are handled each year and the seven-year record of settlements is a testament to its success.

However, when the lathers broke with the board, it signalled the outbreak of internal dissentions. Durkin's plumbers union quickly threw its weight behind the small (15,000-member) lathers union to challenge the board's authority to handle jurisdictional assignments.

The issue is now out of the hands of Dunlop's board. The lathers have taken their case to the National Labor Relations Board. Both sides have argued their case and are awaiting a ruling—expected in several months.

In taking their case to the NLRB, the lathers are asking the federal board to overrule the Dunlop board's decision and grant them jurisdiction. If the NLRB complies, the joint board says it would "encourage violation of the joint board agreement and gradually weaken, if not destroy, the board."

• **The story**—It all began when Local 9 of the lathers union, in Arlington, Va., signed a contract late last year with subcontractor A. W. Lee to handle installation of acoustical tile on the Westinghouse Air Brake Corp. building in Fairfax County, Va. Here's how the squabble developed:

• The AFL carpenters union made a claim before the joint board that its members should be assigned the work —a comparatively new method of suspending acoustical ceiling by the use of metal supports.

• The board, with the lathers, carpenters and the Lee Company participating, awarded the work to the carpenters. Lee then dismissed the lathers and its members went on strike.

• Lee promptly appealed to the NLRB for an injunction and while the case was in court the lathers agreed to call off their strike. Now with the case before the NLRB, the lathers have urged that body to make another ruling that their members should be given the assignment because their union had a contract with Lee to do the work.

• Last week, presidents of the AFL construction unions met in secret to discuss the problem and voted 16-2 against the lathers' position. The plumbers joined in the dissent and at that time Durkin argued that assignments should be made by contract between contractors and unions and not by joint board decision.

• **Good record**—Because the rules of the joint board call for mandatory acceptance by the parties involved, few jurisdictional construction cases have reached the NLRB. Only one other major challenge to the board's operations has come up before. In a case also involving the plumbers, the NLRB held five years ago that signatories to a joint board agreement were bound by its decision.

One current NLRB member, Philip Ray Rodgers, recently reiterated the sentiment that jurisdictional questions should be handled by the joint board. At a meeting of the Associated General Contractors, he noted that "The results achieved by your joint board . . . are much more effective than would be the case if all these work-assignment disputes were referred to the NLRB for settlement."

• **Pros and cons**—In arguing its case before the NLRB, Lathers Local 9 made these points:

• Being a local of the lathers, it's not bound by a joint board decision even though its international officers took part.

• The joint board "is looked upon with disfavor by some building trades unions and employers."

• "Decisions of the joint board legally are non-enforceable and violate natural justice and due process."

• Lee was not a signatory to the agreement.

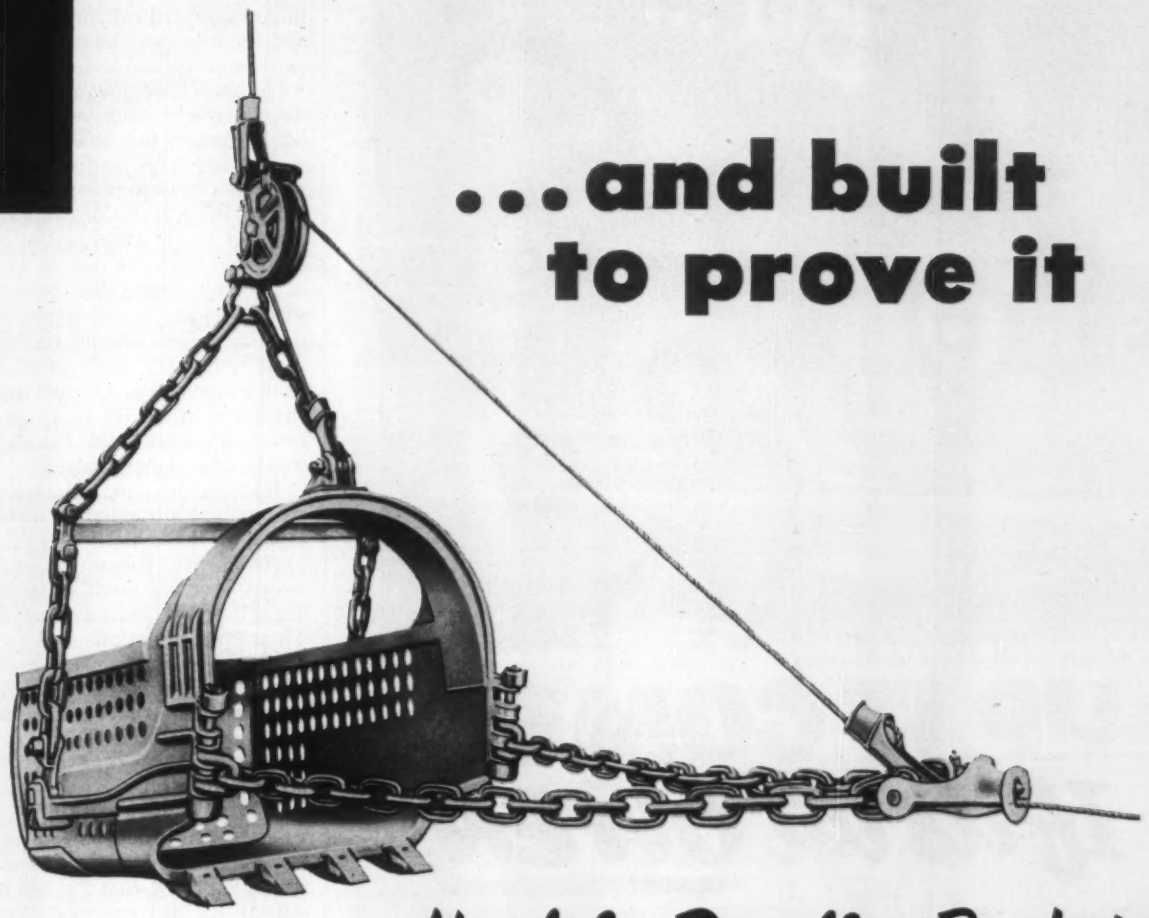
Dunlop's board, in a brief written by his fellow Harvard University Professor Archibald Cox, countered that in the past, NLRB has declined to overrule joint board decisions. Cox noted that if any disappointed party could appeal a decision to the NLRB, it "would tend to discourage and render worthless the making of such agreements."

To Local 9's position that it is not bound to an agreement signed by its

(*Continued on page* 110)

TOUGH!

...and built to prove it



Hendrix Dragline Buckets

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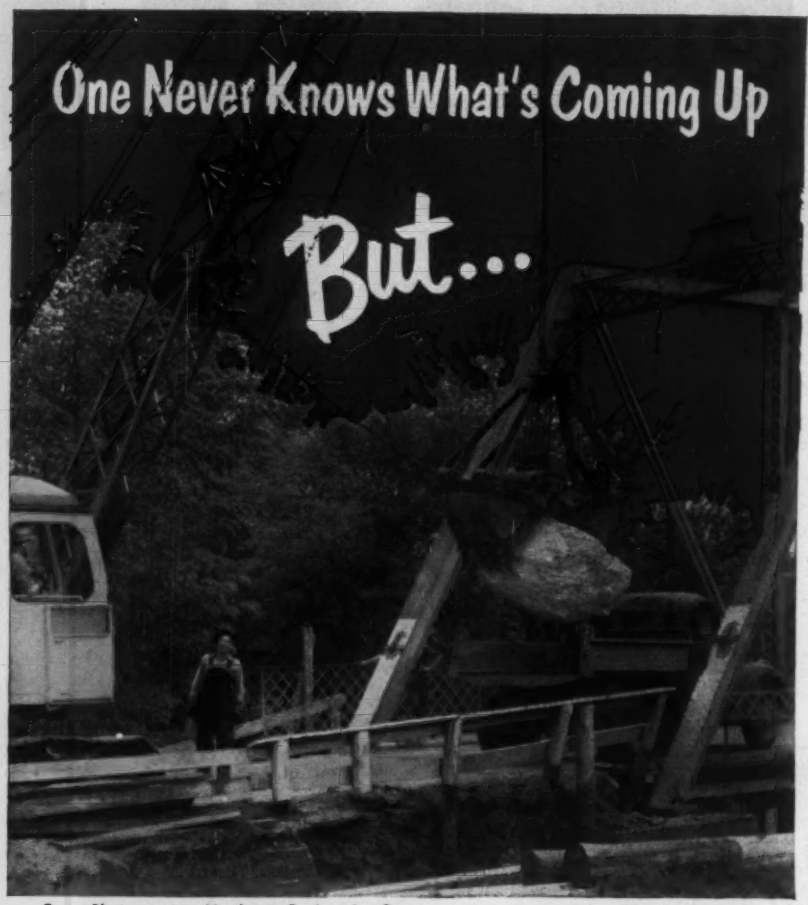
Hendrix Dragline Buckets were designed for tough digging...and engineered for the job! Their all-welded construction makes for trouble-free performance, day in and day out. Designed and built by men who know what it takes to get the job done, Hendrix Buckets have the stamina to stand up under tough going when the chips are down!

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA



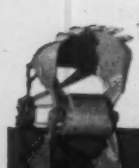
Crane Photo courtesy Northwest Engineering Co.

UP IT COMES
If it's an OWEN

Experienced contractors can determine with reasonable accuracy the general digging conditions they face, but they can hardly anticipate encountering unusual conditions such as illustrated.

If their digging equipment embodies the needed factors of extra power and strength, these problems are "taken in their stride" and the object is removed with out delay.

Owen, through long years of specialized experience, anticipates such difficulties in the design, engineering, and construction of their buckets. This is one of the factors that accounts for the dominant position that Owen buckets hold in excavating operations today.



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international, Cox pointed out that not a single local had protested an international's agreement in the board's seven-year history. And, he claimed, though the contractor was not a signatory to the board, he joined in and accepted this ruling and others, and therefore was bound by its terms.

• **Plumbers have disagreed**—While this dispute might have been a one-sided fight between the small lathers union on the one hand and the joint board of contractors and unions on the other, it has grown to major proportions because of the position of the plumbers union.

Durkin's union has been at odds with the joint board, frequently arguing that unions should be allowed to make contracts with employers for work assignments, without recourse to the board itself. If that's permitted, the joint board told the NLRB, it would cause labor strife.

Interests of more than one craft are involved in work assignments, Dunlop told the NLRB.

"Collective bargaining agreements do not control work assignments or disposition of jurisdictional disputes. Their chief function is to notify the employer of claims made by the contracting union, and it has never been supposed that they could dispose of the 'rights' of others."

Labor Briefs . . .

• **Sanders and the ironworkers**—In our April 7 Labor Briefs, p. 119, it was incorrectly stated that "a federal court upheld the International Association of Ironworkers' expulsion of W. B. Sanders as a union official but permits him to remain a member." Although the court held that union action barring other defendants from the right to hold office in the union for a certain number of years, but not denying union membership for life, was fair and proper, it ruled that the union's denial of union membership to Sanders for life was not a reasonable exercise of authority and was therefore unlawful and void.

• **Overtime pay dispute**—A permanent injunction has followed the temporary order restraining operating engineers from picketing F and C Engineering Co., grading and paving contractor at the Little Rock Air Force Base (ENR Mar. 24, p. 96). The court saw no fault in union demands for overtime pay but said the mass picketing, violence and intimidation went beyond peaceful and lawful means to achieve the goal.

OFFICIAL PROPOSALS

Bids: June 1, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge construction for a section of the Massachusetts Turnpike in the Towns of Lee and Becket (CONTRACT NO. 51-021) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachsetts until 11:30 A.M. of Wednesday, June 1, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

PROPOSAL GUARANTY: $120,000.

Charge for plans and proposal forms: $70.00, not refundable.

Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts, and at office of Section Engineer: Brown & Blauvelt, 44 School Street, Boston, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
May 7, 1955.

Bids: June 8, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Daylight Saving Time, on 8 June 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of superstructure of the Lehigh River Bridge and the superstructure of the Pohopoco Creek Bridge in Turnpike Section 36-EF, part of the Northeastern Extension of the Pennsylvania Turnpike in Mahoning Township and Parryville Borough, Carbon County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 1,420 feet southeast of the center line of Legislative Route 163 at Turnpike Station 167 + 80.55 in Mahoning Township, Carbon County; thence in a northwesterly direction 2,133.12 feet to Turnpike Station 199 + 13.67 at a point approximately 713 feet northwest of the center line of Legislative Route 163 in Parryville Borough, Carbon County, a distance of approximately 0.4 miles.

The approximate quantities of the principal items for the Lehigh River Bridge superstructure are as follows:

Class A Concrete in Bridge Deck, Curbing, Abutment Walls	3,000 cubic yards
Steel Reinforcing Bars	491,000 pounds
Structural Carbon Steel	2,800,000 pounds
Structural Silicon Steel	1,720,000 pounds
Metal Pipe Railing	3,070 lineal feet
Pairs of Utility Duct	2,950 lineal feet
6" Cast Iron Pipe attached to Piers	300 lineal feet

The approximate quantities of the principal items for the Pohopco Creek Bridge superstructure are as follows:

Class A Concrete	1,834 cubic yards
Reinforcement Bars	336,300 pounds
Fabricated Structural Steel	3,277,000 pounds
Fabricated Structural Manganese Steel	705,000 pounds
Metal Railing	1,915 lineal feet
Pairs of Utility Duct	1,891 lineal feet

Copies of plans and specifications and other contract documents are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 18 May 1955. Plans, specifications and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy.

OFFICIAL PROPOSALS

Plans and contract documents for this section, exclusive of specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
5 May 1955

Bids: June 8, 1955

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS

Contract No. SA-1, SA-3, SA-5, SA-7 and SA-8
Contract No. SA-1, SA-3 and SA-5
Contract No. SA-7 and SA-8

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, June 8, 1955, for the performance of each of the contracts enumerated above.

Contract No. SA-1, SA-3, SA-5, SA-7 and SA-8

The complete construction of the Service Areas including Site Improvements; General Construction of all Buildings; Plumbing, Drainage and Fuel Tanks; Heating, Ventilating and Air Conditioning; Refrigeration; Electrical Light and Power; Kitchen Equipment; Furniture; Sanitary Sewage and Water Supply, and related work located approximately as follows:

SA-1—Located near East Gary in Porter County
SA-3—Located near Rolling Prairie in LaPorte County
SA-5—Located near Elkhart in Elkhart County
SA-7—Located near Brighton in LaGrange County
SA-8—Located near Fremont in Steuben County

Contract No. SA-1, SA-3 and SA-5

The complete construction of the Service Areas including Site Improvements; General Construction of all Buildings; Plumbing, Drainage, and Fuel Tanks; Heating, Ventilating and Air Conditioning; Refrigeration; Electrical Light and Power; Kitchen Equipment; Furniture; Sanitary Sewage and Water Supply, and related work located approximately as follows:

SA-1—Located near East Gary in Porter County
SA-3—Located near Rolling Prairie in LaPorte County
SA-5—Located near Elkhart in Elkhart County

Contract No. SA-7 and SA-8

The complete construction of the Service Areas including Site Improvements; General Construction of all Buildings; Plumbing, Drainage, and Fuel Tanks; Heating, Ventilating and Air Conditioning; Refrigeration; Electrical Light and Power; Kitchen Equipment; Furniture; Sanitary Sewage and Water Supply, and related work located approximately as follows:

SA-7—Located near Brighton in LaGrange County
SA-8—Located near Fremont in Steuben County

NOTICE TO BIDDERS

Copies of the Plans, Specifications and Proposal Forms for said Contracts are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Specifications for the Service Areas	$ 5.00
Plans and Proposal Forms for the Service Areas	$50.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

OFFICIAL PROPOSALS

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid per Construction Contract covered by the Contract. If the Bidder shall tender bids for two or more Contracts which include the same Construction Contract, the Construction Contract thus duplicated in the bidding need be counted only once in determining the total amount of the Proposal Guaranty. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, June 8, 1955, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of any of the above enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Charles W. Keating
Secretary-Treasurer

Bids: May 31, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF POWER CIRCUIT BREAKERS
SPECIFICATIONS NO. PA-5-14021
ST. LAWRENCE CONTRACT NO. P17

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of power circuit breakers and delivery thereof, f.o.b. the Authority's classification yard, Massena, New York in the following ways:

(1) If brought in person on the day of receiving bids until 10:30 A.M., Eastern Daylight Saving Time on the 31st day of May, 1955, 270 Broadway, Hearing Room C on the sixth floor, New York, New York.

(2) If mailed in until 10:15 A.M. Eastern Daylight Saving Time on the 31st day of May 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address gievn in (1) above.

Bids will be entertained for the power circuit breakers, associated equipment and services in accordance with the bidding schedules. Erection at the site of installation will be done by others but services of erecting engineers shall be provided by the manufacturers if and when required. Delivery of twelve 115 kv. power circuit breakers will be required by August 15, 1957, and twelve 230 kv breakers by May 15, 1958.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five (5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. Bid deposit will be required with each bid in an amount not less than 10 percent of the maximum price bid for any schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

OFFICIAL PROPOSALS

Bids: May 31, 1955

Fairfax County, Virginia Integrated Sewerage System

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Tuesday, May 31, 1955, at 2:00 o'clock, P.M., Eastern Daylight Time, for the construction of:

CONTRACT NO. 47: Approximately 6,200 lineal feet of 8 inch sanitary sewers and appurtenances.

Promptly thereafter they will be publicly opened and read in the Board of County Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications, and contract documents may be examined and copies thereof may be obtained at the Office of the Sanitary Engineer, upon payment of Five Dollars ($5.00) per set, which amount shall not be returnable.

All bids must be on separate form furnished by the County.

Contractors, whether resident or non-resident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

Each bid must be accompanied by cash, or by the certified check of the bidder, made payable to the Director of Finance, County of Fairfax, Virginia, or by an acceptable bidder's bond in an amount not less than Five Percentum (5%) of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

COUNTY OF FAIRFAX, VIRGINIA
By: Harry L. Hale
Sanitary Engineer

Dated: May 12, 1955

Bids: July 1, 1955

Construction of a Sewage Treatment Plant

ADVERTISEMENT

Notice is hereby given that sealed bids will be received in accordance with the law by the Puerto Rico Aqueduct and Sewer Authority until 3:00 o'clock P.M. on the first day of July, 1955, at the office of the Authority in Santurce, Puerto Rico, and will then be publicly opened and read.

The work comprises furnishing materials and performing the labor for the furnishing of equipment for and the construction of the Puerto Nuevo Sewage Treatment Plant, a primary sewage treatment plant with an initial capacity of twenty-four (24) million gallons per day.

Copies of the plans and specifications may be examined without charge at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico, or at the offices of Buck, Seifert and Jost, Consulting Engineers, 223 Manuel V. Domenech Street, Hato Rey, Puerto Rico and 112 East 19th Street, New York 3, New York. Copies thereof may be obtained at the office of the Treasurer of the Puerto Rico Aqueduct and Sewer Authority, Stop 26½, Fernandez Juncos Avenue, Santurce, Puerto Rico or at the office of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York, upon deposit of cash or certified check payable to the Puerto Rico Aqueduct & Sewer Authority in the amount of One Hundred and Fifty ($150.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received or else the entire deposit will be forfeited.

Bids will be received only from persons who have requested the plans and specifications and made the required deposit therefore under their own names. These documents cannot be obtained later than June 15, 1955.

The work to be performed is divided into six (6) sections, under which the work is classified according to its character. The principal items of work are as follows:

SECTION B—Furnishing and delivering C.I.F. San Juan, Puerto Rico, one (1) mechanically cleaned bar screen in combination with one (1) screenings shredder, together with their mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION C—Furnishing and delivering C.I.F. San Juan, Puetro Rico, grit handling equipment for a forty (40') feet diameter grit chamber, including collecting and cleaning equipment and their mechanisms and appurtenances, together with the services of an expert to supervise the installation and testing of the equipment.

SECTION D—Furnishing and delivering C.I.F. San Juan, Puerto Rico, sludge collectors and accessory equipment for four (4) settling tanks, together with their mechanisms and appurtenances, and the services of an expert to supervise the installation and testing equipment.

SECTION E—Furnishing and delivering C.I.F. San Juan, Puerto Rico, chlorinating equipment, including three (3) chlorinators, three (3) evaporators, two (2) scales and all piping required for chlorine gas and chlorine solution, together with their mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION F—Furnishing and delivering C.I.F. San Juan, Puerto Rico, four (4) electric motor driven sewage pumping units, one (1) unit of seven thousand (7,000) gallons per minute capacity, two (2) units of fourteen thousand (14,000) gallons per minute capacity and one (1) unit of twenty-one thousand (21,000) gallons per minute capacity, complete with their motors, mechanisms and appurtenances and the services of an expert to supervise the installation and testing of the equipment.

SECTION G—Constructing the Puerto Nuevo Sewage Treatment Plant including influent sewer, influent junction chamber, screening chamber, main sewage pumping station, grit chamber, settling tanks, effluent chamber, outfall sewer, sludge pumping station, sludge digestion tanks and digester control building, non-potable water supply system, administration building, garage and shop, outside connecting piping, roadways and paths, grading, miscellaneous structures and appurtenances and the installation of screening, grit handling, settling tank, chlorinating and pumping equipment furnished by others.

Bidders will be allowed to bid on one (1) or more sections.

Each proposal must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to five (5%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
By RAFAEL V. URRUTIA
Executive Director

BUCK, SEIFERT AND JOST
Consulting Engineers

Bids: June 9, 1955

Contract No. G-4

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

STRINGER SPANS, SUPERSTRUCTURE FROM NEWTON CREEK TO NORTH-SOUTH FREEWAY OF THE BRIDGE OVER THE DELAWARE RIVER CONNECTING PACKER AVENUE, PHILADELPHIA, PENNSYLVANIA, AND GLOUCESTER, NEW JERSEY

Sealed bids will be received for Stringer spans, superstructure from Newton Creek to North-South Freeway of the bridge over the Delaware River connecting Packer Avenue, Philadelphia, Pennsylvania and Gloucester, New Jersey, known as Contract G-4, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P.M. (Daylight Saving Time), June 9, 1955, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $135,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

Bids: June 7, 1955

Contract NA-320.001

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
ALTERATIONS TO ELECTRICAL DISTRIBUTION SYSTEM IN NEW SWITCHHOUSE AREA

Sealed proposals for making alterations to the electrical distribution system at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 7, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 19, 1955

Bids: May 30, 1955

Collecting and Disposing of Refuse

NOTICE TO ALL REFUSE COLLECTORS:

Sealed proposals will be received by the City of Columbia, South Carolina, until 11:00 A.M., E. S. T., Monday, May 30, 1955, at the office of the City Engineer, City Hall, Columbia, South Carolina, at which time they will be publicly opened, for the public work of COLLECTING AND DISPOSING OF REFUSE in the City of Columbia, South Carolina.

The population of Columbia in 1950, as determined by the United States Bureau of the Census, was 86,914. The present estimated population of Columbia, according to the Columbia Chamber of Commerce, is 95,000.

Specifications and Bid Proposal forms may be obtained from the office of the City Engineer, City Hall, Columbia, South Carolina.

T. F. Maxwell
City Manager

Bids: May 31, 1955

State Of New Jersey State Highway Department Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

FLEMINGTON-VOORHEES CORNER ROAD—FAS PROJECT S-196(1)

Construction of Flemington-Voorhees Corner Road from U. S. Route 202 at Flemington to William R. Davis Lane and Culvert at Branch of Raritan River, Raritan Township, Hunterdon County, Federal Aid Secondary Project No. S-196(1). Length 1.409 miles. The principal items of construction are:

Estimated:
13,507 cu. yds. Roadway Excavation—Unclassified
21,158 sq. yds. 4" Macadam Base Course
21,688 sq. yds. 3" Mod. Pen. Macadam
45,502 gals. Bituminous Materials
1,845 tons Bituminous Concrete
1,336 lin. ft. Drainage

Bids for the above will be received at

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

the office of the State Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, May 31, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the "Required Provisions—Federal-Aid Contracts" of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by the following documents: (1) a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00; (2) a proposal bond for a sum of not less than fifty percent (50%) of the total price bid for the project; (3) a financil statement (Part 1 of the Prequalification Questionnaire); (4) a plan and equipment statement (Part 3 of the Prequalification Questionnaire); and (5) a Non-collusion Affidavit executed in duplicate; and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATEHIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: June 17, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF SPILLWAY GATES, CONTROL GATES AND STOP LOGS
FOR
LONG SAULT DAM & IROQUOIS DAM
SPECIFICATION NO. PA-5-15077
ST. LAWRENCE CONTRACT NO. P13

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW York will receive sealed proposals for the manufacture, and furnishing of thirty-one 52'x30' spillway gates, thirty-two 52'x48' control gates and six 52'x8' stop logs and delivery thereof f.o.b. destination in the following ways:

(1) If delivered in person on the day of receiving bids until 10:30 A.M. Eastern Daylight Saving Time on the 17th day of June 1955, in Hearing Room C on the 6th floor, 270 Broadway, New York 7, New York.

(2) If mailed in until 10:15 A.M. Eastern Daylight Saving Time on the 17th day of June, 1955 at the Authority's office 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for 31 gates, or 32 gates and 6 stop logs, or 63 gates and 6 stop logs, in accordance with the bidding schedules. The total weight of all gates and stop logs is estimated to be 8000 tons. Erection at the site of installation will be done by Others.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by propective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, after May 4, 1955 upon application and prepayment of a fee of Twenty ($20.00) dollars per initial set of contract documents and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid guarantee will be required with each bid in an amount not less than 10 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. C. CHAPIN
GENERAL MANAGER

Bids: May 31, 1955

Sewage Treatment Facilities

THE PORTLAND SEWER DISTRICT
TOWN OF PORTLAND, CONNECTICUT
ADVERTISEMENT FOR BIDS

Sealed proposals for the construction of Sewage Treatment Facilities for the Portland Sewer District, Town of Portland, Connecticut, will be received by the Secretary of the Portland Sewer District at the Town Hall until 7:00 P.M. Daylight Savings Time, May 31, 1955, at which time they will be publicly opened and read. The work consists of a sewage treatment plant for one section of the District and a septic tank for another section.

Each bid shall be in accordance with the requirements of the Contract Documents which are available for examination or purchase at the office of the Secretary of the Portland Sewer District, Town Hall, Portland, Connecticut, or of Gibbs & Hill, Inc., Consulting Engineers, Pennsylvania Station, New York 1, New York. Copies may be purchased upon deposit of $20.00 per set, which deposit will be refunded to each actual bidder or ½ the deposit to non-bidders, upon return of such copies in good condition within 5 days after the bids are opened.

The District reserves the right to reject any or all bids and to waive any informality in bids received.

BOARD OF SEWER COMMISSIONERS
THE PORTLAND SEWER DISTRICT
PORTLAND, CONNECTICUT
By: McClure E. Ellsworth
District Secretary

Dated: May 4, 1955

Bids: June 8, 1955

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS
Contract No. C-11 A

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, June 8, 1955, for the performance of the contract enumerated above.

Contract No. C-11 A

The grading, drainage, structures and paving of approximately 0.9 miles of the Indiana East-West Toll Road beginning at a point about 1,340 feet Southwest of 15th Avenue at Toll Road Centerline station 1140 plus 44 in Lake County and extending eastwardly to a point about 1,130 feet East of Clay Street at Toll Road Centerline Station 1187 plus 00 in Lake County, Indiana. The approximately quantities of the major items of construction are as follows.

Common Excavation	291,000 cubic yards
10 inch reinforced concrete pavement	24,000 square yards
Culvert Pipes and Storm sewers	1,600 lineal feet
Cast-in-Place concrete piling	7,700 lineal feet
Concrete for Structures	2,500 cubic feet
Reinforcing Steel	355,000 pounds
Fabricated Structural Steel	1,035,000 pounds

Copies of the Plans, Specifications and Proposal Forms for said Contract are available for the public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set. Sums are non-returnable.

Standard Specifications for the Indiana East-West Toll Road	$5.00
Plans, special provisions and proposal forms, per set, per construction section	$25.00
INFORMATIONAL DRAWINGS	
Cross-sections, per set, per construction section	$25.00
Soil plan and profiles, per CE set, per construction section	$5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

NOTICE TO BIDDERS

Contractors statement for qualification on the forms supplied by the Commission will be required from all bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of Five (5%) per cent of the total price bid for the contract. The Proposal Guaranty shall be in form of an acceptable surety bond or a certified check on a solvent bank.

If the bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized.

All bids must be received at or before 10:00 A.M., Central Standard Time, June 8, 1955 in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above contract, if any award be made, will be to the bidder of bidders whose proposal is lowest and best for the performance of the work, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Bids: June 17, 1955

Notice To Contractors
Middlesex County Sewerage Authority
New Brunswick, N. J.

Sealed bids for constructiing the Sayreville Pumping Station, consisting of five component contracts, as listed below, will be received at the office of the Middlesex County Sewerage Authority, 103 Bayard Street, New Brunswick, New Jersey, until 2:00 P. M., Eastern Daylight Saving Time, on June 17th, 1955, and then will be publicly opened and read aloud.

Contract No.	Contract Title
14	Sayreville Pumping Station—General
14A	Sayreville Pumping Station—Structural Steel
14B	Sayreville Pumping Station—Plumbing, Piping and Pumps
14C	Sayreville Pumping Station—Heating and Ventilating
14D	Sayreville Pumping Station—Electrical

Drawings and contract documents may be examined at the office of the Authority and of Bogert and Childs, Consulting Engineers, 624 Madison Avenue, New York 22, New York. Copies may be obtained only from the Authority on payment of $50.00, which amount will not be refunded..

Bid Security: certified check to the order of the Middlesex County Sewerage Authority, or bid bond in amount stated below. Successful bidder must furnish 100% performance bond.

Contract No.	Bid Security
14	$30,000
14A	1,000
14B	29,000
14C	2,500
14D	7,500

MIDDLESEX COUNTY SEWERAGE AUTHORITY
By: Chester A. Lydecker
Chairman

OFFICIAL PROPOSALS

Bids: June 7, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF
120,000 KVA THREE PHASE
AUTOTRANSFORMERS
SPECIFICATIONS NO. PA-4-14003
ST. LAWRENCE CONTRACT NO. P14

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of two (2) 120,000 kva, three phase autotransformers and delivery thereof f.o.b. the Authority's classification yard, Massena, New York, in the following ways:

(1) If brought in person, on the day of receiving bids until 10:30 A. M. Eastern Daylight Saving Time on the 7th day of June, 1955, 270 Broadway, Hearing Room C on the sixth floor, New York, New York.

(2) If mailed in, until 10:15 A. M. Eastern Daylight Saving Time, on the 7th day of June, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

Proposals will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for two (2) autotransformers and associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others, but services of erection engineers shall be provided by the manufacturers if and when required.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York. 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per unit set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the price bid for the schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: May 31, 1955

State Of New Jersey State Highway Department Trenton

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

INTERSECTION AT SLAPES CORNER—
FAS PROJECT S-179(1)

Construction of Intersection at Slapes Corner on Deepwater-Slapes Corner Road, Mannington Township, Salem County, New Jersey, Federal Aid Secondary Project No. S-179(1). Length 0.284 miles. The principal items of construction are:

Estimated:
16,232 cu. yds. Borrow Excavation
7,280 sq. yds. 4" Topsoiling
10,088 sq. yds. 9" Gravel Base Course
626 lin. ft. Drainage
4,095 lin. ft. White Conc. Vertical Curb

Bids for the above will be received at the office of the State Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, May 31, 1955, at NINE o'clock (9:00 A.M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the "Required Provisions=Federal-Aid Contracts" of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans and supplementary specifications will be furnished upon payment of a fee of FIFTEEN DOLLARS ($15.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., with a check drawn to the order of the State Highway Department. A charge of $5.00 will be made for supplementary specifications unaccompanied by construction plans. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by the following documents: (1) a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00; (2) a proposal bond for a sum not less than fifty (50) percent of the total price bid for the project; (3) a financial statement (Part 1 of the Prequalification **Questionnaire**; (4) a plan and equipment statement (Part 3 of the Prequalification Questionnaire); (4) a plan and equipment Affidavit executed in duplicate. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

U. S. Government

Bureau of Reclamation North Platte River Projects 42755-P10 Casper, Wyoming UNITED STATE DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-372 for furnishing labor and materials and performing all work for CONSTRUCTING DROP STRUCTURES OF STEEL SHEET PILING AND STEEL SHEETING FOR OREGON TRAIL DRAIN, STATION 131+45 TO STATION 178+15, Kendrick Project, Wyoming, will be mailed to Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opning at 10:30 a.m., Mountain Standard Time, June 2, 1955, at the office of the Bureau of Reclamation, Reclamation Center, Casper Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, Projects Manager, Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.75 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

I. J. Matthews

Bureau of Reclamation North Platte River Projects 42955-P11 Casper, Wyoming UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-373 for furnishing labor and materials and performing all work for BUILDINGS AND UTILITIES FOR FIELD OFFICE AND TESTING LABORATORY AT GLENDO DAM SITE, Oregon Trail Division, Glendo Unit, Wyoming, Missouri River Basin Project, will be mailed to Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for public opening at 10:30 a.m., Mountain Standard Time, May 26, 1955, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, Projects Manager, Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $1.00 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

I. J. Matthews

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4413) will be received at Folsom, California until June 9, 1955, for furnishing labor and materials for additions to Folsom 115-kilovolt switchyard, Folsom Power Plant and Folsom-Elverta terminal switching facilities, Folsom Unit, American River Division, Central Valley Project, California. Location near Sacramento and Elverta in Sacramento County, California. Principal items are 450 cu. yds. excavation; 50 cu. yds. concrete; 25,000 pounds furnishing and erecting steel structures; lump sum —installnig control boards and control switchboards; 6 transformers—installing transformers; 6 switches — installing switches; 570 lin. ft.—furnishing and installing 3-inch ips aluminum pipe bus; and other work. Completion time 350 days. For particulars, address Bureau of Reclamation, P. O. Box 2511, Sacramento, California; P. O. Box 877, Folsom, California; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4426) will be received at Loveland, Colorado until June 16, 1955, for furnishing labor and materials for earthwork and structures for South Platte Supply Canal, Firestone siphon, Station 1062/40 to Station 1094/55, Colorado-Big Thompson Project, Colorado. Location in Firestone, Colorado. Principal items are 21,300 cu. yds. excavation; 17,500 cu. yds. backfill; 3,180 lin. ft. 66-inch concrete pressure pipe; 56 cu. yds. concrete in structures; and other work. Completion time 150 days. For particulars, address Bureau of Reclamation, P.O. Box 449, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, May 4, 1955. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., JUNE 9, 1955, for Project 1D18, Colonial Parkway, James City County, Virginia. Construction of Steel I-beam Bridge with Reinforced Concrete Substructure on Timber Piling over College Creek. Length: 0.017 mile. The approximate quantities of the more important items are: 1,100 cu. yd. Excavation for Structures, 13,000 cu. yd. Excavation for Borrow, 1,164 cu. yd. Concrete, 185,000 lb. Reinforcing Steel, 170,000 lb. Structural Steel, and 7,000 lin. ft. Untreated Timber Piling. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4424) will be received at Ogden, Utah, until June 14, 1955, for furnishing labor and materials for Pineview Dam Enlargement and Highway Relocation, Weber Basin Project, Utah. Location near Ogden, Utah. Principal items are 675,000 cu. yds. excavation; 150,000 cu. yds. zones 1, 2 and 3, fill in dam embankment; 1,300 lin. ft. drilling grout holes, 0 to 30, 30 to 60, and 60 to 110 feet; 1,300 sacks pressure grouting; 9,300 barrels furnishing and handling cement; 361,000 lbs. furnishing and placing reinforcement bars; 6,600 cu. yds. concrete; 1,920 lin. ft. furnishing and laying concrete pipe; approximately 2.25 miles relocating and bituminous surfacing of highways; and other work. Completion time 800 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Sealed bids for construction of Library Building, Gallaudet College, Washington, D. C., will be received until 2:00 P.M., Eastern Daylight Time, June 7, 1955, in Rm. 7100 GSA Regional Office Bldg., 7th & D Sts., S.W., Washington, D. C., and then publicly opened in Rm. 7100. Bidding material may be obtained by general contractors from Public Buildings Service, Rm. 1304 GSA 19th & F Sts., N.W., Washington, D. C., Executive 3-4900, Extn. 2397. P. A. Strobel, Commissioner of Public Buildings, General Services Administration.

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Sales Engineer: Young; Civil; with two or three years of engineering or construction experience for sales and promotional work on drainage and allied construction products and steel buildings. Salary, car and expenses furnished. Positions open in Texas, Mississippi and Oklahoma. P-6361, Engineering News-Record.

Asphalt Road Superintendent permanent position, write stating qualifications to: Box 142, Greenwich, Connecticut.

Engineer to estimate and design prestressed concrete members for established prestressed concrete manufacturing plant. P-6285, Engineering News-Record.

Estimator-Office Engineer—Experience in engineering type construction preferred. Excellent opportunity for profit sharing arrangement for qualified man. Submit complete education, experience background, salary requirement to United Construction Co., Inc. Box 5104—Memphis 12, Tenn.

Wanted. Sanitary or Civil Engineers as resident engineers on large sewage project involving sewage treatment plant, pumping stations, and 63-½ miles of intercepting sewers including 30 miles in tunnel. Program calls for 3-year construction period. Must be experienced. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, Pittsburgh 19, Pennsylvania.

Wanted: Construction Superintendent and Foreman for Water Mains and sewers. Steady employment in or near Indianapolis. Experience required. P-6434, Engineering News-Record.

Civil Engineer, Top flight surveyor and office engineer for difficult highway job with several structures. Good salary for qualified man. Chicago area. P-6436, Engineering News-Record.

Experienced Engineer capable of taking charge of a highway design project. Location Middle Atlantic. Attractive salary and also some participation. P-6437, Engineering News-Record.

Man Wanted: Engineering graduate, age 25-30, permanent position in expanding New England Coastal community, with established firm engaged in manufacturing several building items with some construction. Excellent long range opportunity. P-6439, Engineering News-Record.

Engineer—Married man about 40 years of age. Experienced in water mains, roads and sewer construction. Steady employment 12 months per year with two weeks vacation. Write P-6378, Engineering News-Record.

Young Engineer interested in concrete. Location Ohio. Salary $400. plus. Liberal travel allowance. P-6383, Engineering News-Record.

Construction Expeditor, for office, field coordination with general contractor, doing commercial and public work. Cleveland, Ohio and vicinity. P-6379, Engineering News-Record.

Teaching Position—Engineering Graduate, Industrial and teaching experience desirable. Opportunity to work on advanced degree. Write: Head, Department of Engineering Drawing, Iowa State College, Ames, Iowa.

Sprinkler Engineer (Mid-West)—Must be experienced in design, installation, and sales to head up and manage automatic sprinkler division of AAA-1 Company. Permanent position, excellent opportunity. Write giving resume of experience, education and salary requirements. P-6388, Engineering News-Record.

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Wanted: Civil Engineer to head Division of Construction Supervision of large sewage works project. One experienced in tunnel construction of aqueducts and sewers preferred but not essential. Give full particulars and salary first letter. Allegheny County Sanitary Authority, 701 Civic Building, 200 Ross Street, Pittsburgh 19, Pa.

Construction Estimator experienced in competitive bidding, (quantity take-off, pricing, sub-bids etc.) for all types of building required by established and progressive general contractor in North Western Ohio and Michigan. Engineering degree preferred but not essential. Write stating qualifications, previous employment, availability and references. Salary open, commensurate with experience and ability. Permanent position for qualified applicant. P-6405, Engineering News-Record.

Engineer, Chem. or Civil, National trade assn., building materials; headquarters N. Y. C., some travel. Min. 2 yrs experience. Salary 5 to 6,000 depending on qualifications. Send resume of training and experience. P-6423, Engineering News-Record.

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Engineer experienced in precise heavy construction surveys for work in north central states. Send record resume, reference and salary requirement to P-6506, Engineering News-Record.

Assessment Department Vacancy. Some engineering and building experience desirable. Fine opportunity to advance to head of department. C. Leland Wood, City Manager, Watertown, New York.

Concrete Paving Superintendent—Thoroughly experienced in all phases of highway and airport construction, including excavation, drainage, and paving. Must be able to handle complete supervision of concrete paving. Excellent opportunity for qualified man. Western New York Area. P-6514, Engineering News-Record.

Engineering Superintendent: Qualifications are, graduate Civil Engineer with some municipal experience. Base salary, $5,000 per year. Applicants should apply to Personnel Officer, City of Boulder, Colorado.

Foreman-Superintendent—Thoroughly experienced in field supervision in excavation and grading on heavy construction projects. Western New York State. P-6517, Engineering News-Record.

Wanted—Young Civil or Sanitary Engineers with at least 3 years experience for developing waterworks and sewage disposal facilities in smaller communities. Character and habits must be above reproach. Submit qualifications and references. Salary commensurate with ability. Gardner & Sterling, Consulting Engineers, P. O. Box 74, Salisbury, Maryland.

Air Conditioning-Heating Sales Engineer, experienced in estimating, lay-out and installation of all types of heating, cooling and ventilation systems. Must be a graduate in engineering. Work in Central Pennsylvania area. Will discuss salary. Write P-6513, Engineering News-Record giving full details.

Wanted—Two experienced structural engineering designers or structural draftsmen by constulting engineer's office. Location San Francisco. P-6512, Engineering News-Record.

(Continued on following page)

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(Continued from preceding page)

The Parsippany-Troy Hills Board of Education (Morris County) has an opening for a Clerk of the Works in connection with a 2½ year school construction program, beginning at once. Apply in writing, giving full details and salary desired to Parsippany Board of Education, P. O. Box 52, Parsippany, N. J.

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Engineer, Civil—32, BCE, MCE, PE(NY). Ground water investigation and reports 3½ yrs. plus, bldg. eng. (civil and mech—including well drilling) 2 yrs., some teaching—$6500. Avail. June 1, PW-6401, Engineering News-Record.

Field Engineer, party chief, inspector. 15 years construction, property, college trained, prefer Southeast. PW-6442, Engineering News-Record.

Bridge construction superintendent nine years experience, pile driving, foundation excavation, form and concrete work, 32 years old, sober, will travel U. S., PW-6523, Engineering News-Record.

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Civil Engineer, M.C.E., P.E. (Wash.) 33, administrative experience. Desires position to gain structural and/or hydraulic experience. Prefer design work, but can prove worth to any firm providing right opportunity. Min. $525 mo., Western States. PW-6482, Engineering News-Record.

Office Supervisor: Age 33, 10 yrs. experience heavy construction—personnel, payroll, clerical, 2 yrs. Labor 4/M; completed 4 overseas contracts; BS general engineering MA Labor economics. Will consider employment anywhere. PW-6481, Engineering News-Record.

Superintendent Manager, 23 yrs. exp. geology engineering, heavy excavating, design & construc. crushing, screening, cleaning plants, earth roads, heavy hauling blast, core, rotary auger drills, heavy blasting, coal and mineral mining, machine shop work maintenance all kinds heavy equiment, complete charge 3 companies, opr. sales, management, knows costs, payrolls, purchasing, can handle problems, now Pa., relocate; references, address Box PW-6476, Engineering News-Record.

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Canadian Civil Engineer 37. P.E. Seeks position as county or city engineer. 5 years experience as resident highway engineer 2½ years engineer on heavy construction, 6 years all type surveys, 1 year struct. steel designer. PW-6532, Engineering News-Record.

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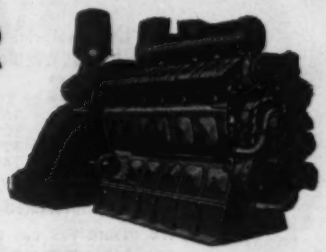

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EDITORIALS

A-Bomb Test Shows Need for Shelters

THE IMPORTANCE OF SHELTERS as a protection against atomic-bomb attacks was reaffirmed by the test reported in last week's issue of ENR (p.21). Set up to provide civil-defense officials with information on the type of destruction they will have to cope with in the event of an A-bomb attack, the test showed clearly that shelters simple enough to be built at reasonable cost, especially those below ground level, can give adequate protection even at relatively short distances from "ground zero."

The test also confirmed the superiority of reinforced masonry over unreinforced masonry and the advantage of the so-called self-framing type of construction over skeleton framing.

Taking into consideration the possibility of hydrogen bombs with many times the energy release of the bomb exploded May 5, which was equivalent to 35,000 tons of TNT, ordinary structures do not appear to be safe even though several miles from a possible target. While a structural frame, and possibly also the walls and roof, might survive a nuclear blast, window glass, doors and other items that might be blown loose would make occupancy of the structure extremely hazardous.

The alternative, therefore, is to provide every building with bomb shelters of sufficient size to accommodate the occupants and within easy reach in case of a sudden attack.

Tests Should Be Broadened

REAL PROGRESS was made at the May 5 atomic-bomb test in developing information of value to the Federal Civil Defense Administration, but there is still much to be desired in the way of broadening the scope of the tests and improving the manner in which the results are circulated. For example, although water-supply is of critical importance in a civil-defense emergency, no water-work installations were tested along with the electric and gas installations at the test buildings on the Nevada desert.

Similarly, the selection of types of buildings to be tested appears to have been haphazard. Only two of the houses at 4,700 ft from "ground zero" were of earthquake-resistant construction. Both were flat-roof, one-story buildings, one being of reinforced concrete and the other of reinforced concrete block. They survived with only minor damage, whereas the single-story sloping-roof house of wood construction and a two-story brick-faced house of conventional construction were completely destroyed.

In any future tests, the associations of producers of brick, lumber and other conventional materials should be asked to propose blast-resistant designs using their materials for the construction of houses of a size and form similar to the two that survived this test so well.

Finally, conclusions obtained from authoritative examination of the results of this latest test or of any future tests should not be kept from use by architects and engineers because of senseless security restrictions. Too many restrictions now are placed on men making such studies. They are not even permitted to discuss their work with other engineers. Such needless restrictions should not be placed on information obtained at such high cost to the taxpayer.

Why Did the Formwork Collapse?

WHAT TRIGGERED the formwork failure in the New York Coliseum May 9 may never be known with certainty. In the haste to rescue trapped workmen, one valuable source of information—the debris—was so greatly disturbed that finding a clue there will be very difficult. Some light, however, may be shed on the cause by an examination of construction drawings, formwork still standing in adjoining areas and testimony of the men who built the supports and eyewitnesses of the disaster.

Concrete was being placed for the main exhibition floor, 22 ft above a street-level exhibition area, when the formwork over a 10,000-sq ft area gave way (ENR May 12, p.23). This portion of the coliseum is flat-plate metal-pan construction, with solid slabs in the vicinity of columns.

The plywood forms for the floor had been supported on two tiers of shores resting on the exhibition floor below. The bottom tier consisted of wood posts with one line of intermediate horizontal wood bracing in two directions. The upper tier consisted of adjustable metal-pipe shores with no intermediate bracing. It was carried on planks extending across the tops of the wood posts.

Collapse of the formwork occurred as concrete was being placed in a bay at one end of the large area for which forms and reinforcing had been set.

While it would be helpful to learn the immediate cause of this disaster, it would be of even greater value to have an explanation of why such a large area collapsed. Would the damage have been as great if only one tier of shores had been used? Could more lines of horizontal bracing, especially in the upper tier, have prevented the collapse from spreading? Would better nailing of the horizontal bracing have been more effective? Should some means have been provided to transmit thrust from the horizontal bracing to the ground? Should diagonal bracing have been used in both tiers?

The investigations now under way may obtain answers to these questions. But if they do not, then the principal technical organizations and service agencies concerned with concrete construction should band together in a research program to answer them.

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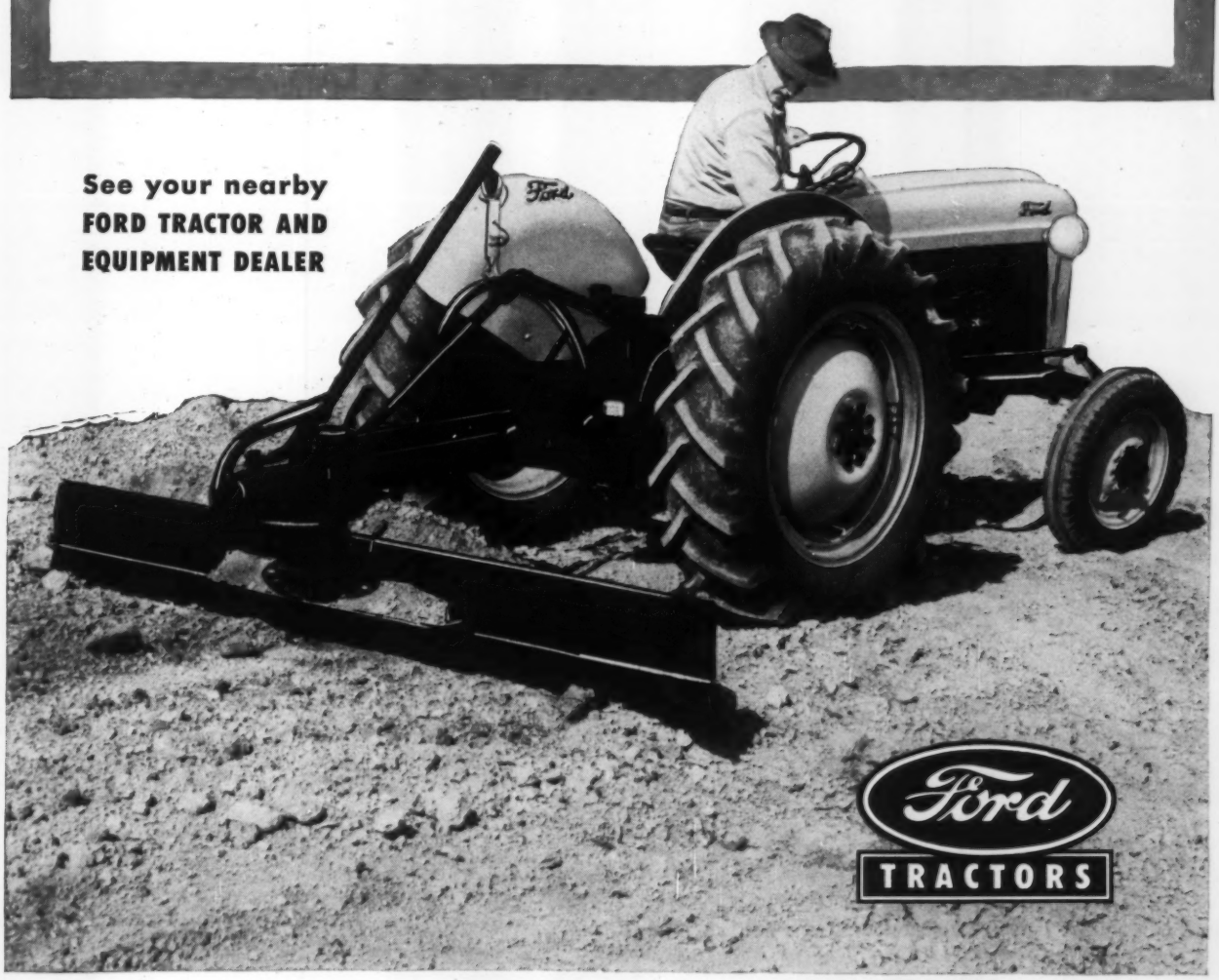

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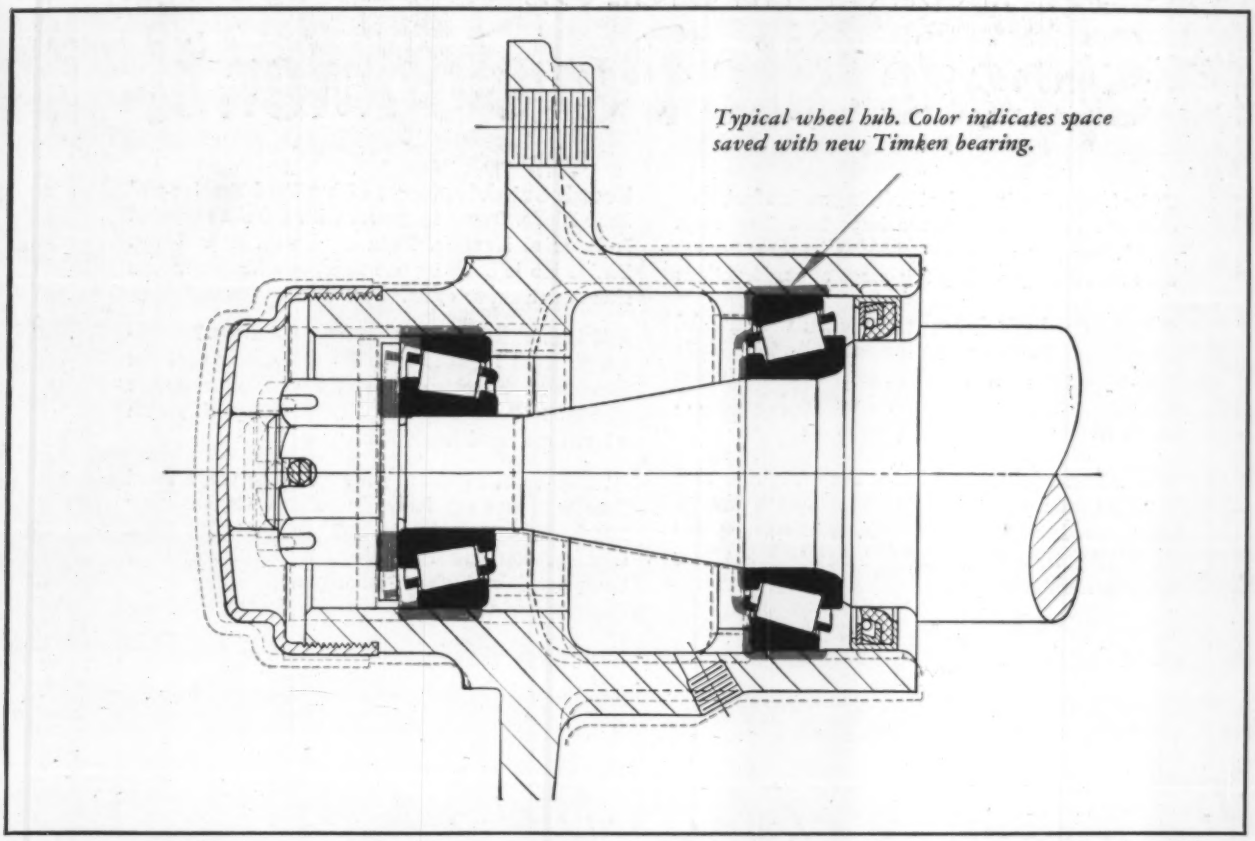

Typical wheel hub. Color indicates space saved with new Timken bearing.

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